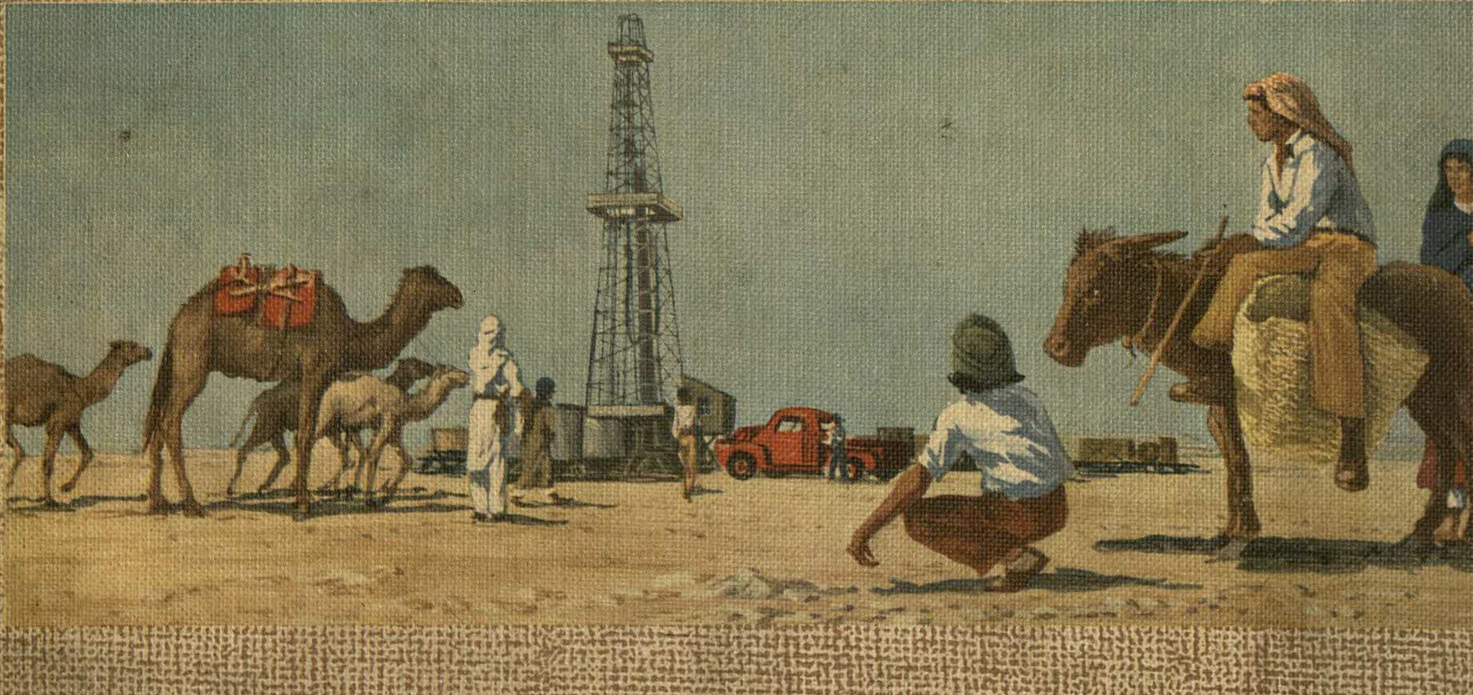
A WORLD VIEW



UNITED STATES OF AMERICA

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A WORLD VIEW

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Drawings by

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EDMUND MONROE · MILO WINTER

MAN IN HIS WORLD
AN ELEMENTARY GEOGRAPHY PROGRAM

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PREFACE

A World View is the fourth of a series of geography textbooks under the general title, MAN IN HIS WORLD. This program reaches from the fourth grade to the junior high school.

The first book of the series, Our Big World, provides the essentials for a pupil's initial concept of the world as the home of man. This includes descriptions of the everyday lives of many people in many places.

The second book, The American Continents, focuses attention on the New World. As a background for understanding our country today, the authors introduce pupils to highlights in the historical geography of the United States. Pupils learn, too, about our neighbors to the north and south—Canada and Latin America.

In Old World Lands, the third book in the series, pupils come to know the peoples and countries of Europe, Asia, Africa, and Australia. Full recognition is given to recent changes in these areas, and the problems that people the world over face in the years ahead.

The fourth book, A World View, is an all-world geography. Having as background a basic, initial concept of all the continents, pupils are now ready to understand the relationships that exist among the peoples of the world and to see the world as a whole. A significant part of this climax understanding is a view of the United States in its world setting.

This all-world geography will help pupils to understand what is happening day by day in the world. This means not only placing significant events in terms of where they happen on the earth's surface, but also placing them in the appropriate setting of human society.

A unique series of maps was designed to help the pupil reach certain specific understandings about the world. One by one the maps present a broad picture of how men make a living from natural resources. Then the data on these maps are combined, continent by continent, so that pupils see how these different patterns of work co-exist in different areas.

With these continental maps as a background, pupils come to see how life and work in each continent are related to life and work in other parts of the world. A full and rich story of life and work in towns and cities helps pupils understand these complex parts of our life today.

Using these basic materials, the pupil may go on and reach certain broad and general understandings which are ultimate objectives of education itself. He discovers, among other things: that all men, everywhere, are interdependent; that civilization itself has its natural foundations; that the need for the careful use of natural resources is great; that cooperation is a highway that leads to a better world. Unless pupils arrive at some such understandings, the study of geography itself will, in large measure, have failed. For geography makes its full contribution to education only when an understanding of the life and work of peoples in all parts of the world becomes a stepping-stone toward good citizenship in the nation and in the world.

In short, the goal of this book is to help pupils understand the world in which they live, and to play a useful and intelligent role in it. Such is the function of geography, broadly conceived.

The quotation on page 54 is taken, by permission, from *Man and His World—the Evolution of the Old World,* by James Mainwaring, copyrighted in 1940, by George Philip and Son, Ltd.

The author acknowledges his debt to Mr. Harlan H. Barrows and Miss Edith P. Parker, senior authors in the first three books in the series. He counts his association with them a high honor. He recognizes that many of the better things in this book may be traced to the invaluable experience gained in the course of that cooperative endeavor.

Special thanks are due Dr. L. LeMar Stephan, Head, Geography Department, State Teachers College, Troy, Alabama, who read critically the entire manuscript and made many helpful suggestions. Miss Beatrice Collins contributed much to the exercise materials, and Miss Alys Conkling was particularly helpful in solving problems concerned with the arrangement of materials in the book. Recognition also is due Mrs. Margaret Johnson who has helped greatly in preparing the entire series.

It has been a particular source of satisfaction to work with Mr. Earl E. Welch, editor-in-chief, who shares the author's belief that the best instructional material is that which contributes most to the goals of education.

Clarence Woodrow Sorensen

Getting Ready to Look at Our World

What do you see when you look about your own community? What do you see when you visit a strange community or city? The answers to these questions will depend on what you have learned to look for. Some people go into a strange community and see almost nothing. They may be conscious only of buildings, neon signs, paved streets, and people on the streets. But if you have learned to look for the important things in a community, you will see much more than this.

You will see how the people in the community make a living. You will see how their life is related to the place where they live on the earth's surface. You will see that their ways of living are related to the presence or lack of certain natural resources and to conditions of weather and climate. You will observe some of the tools and machines with which men work. You may be able to see ways in which the present life of the community is related to what happened there in the past, that is, to the history of the community.

You will see the links which the people of this community have with other communities of the world, some of them perhaps hundreds or thousands of miles away.

This book, A WORLD VIEW, will help you learn to "look with understanding" at the world in which you live. It will help you to become a thoughtful observer of the things you see. It will help you, also, to use skillfully some special tools, such as printed words, pictures, maps, globes, and statistics, in learning to understand parts of the world you cannot see. The goal, of course, is to help you understand your world and the many different kinds of people in it, so that you can be an intelligent citizen of your own country and of the world.

This first unit, *Getting Ready to Look at Our World,* will help you not only in studying this book, but at many other times in your life. Again and again, as you visit a new community or read about one, you will look at it through more inquiring and more observing eyes. You will be better able to look with understanding at your world.

BEDFORD

LOOKING AT ONE COMMUNITY

A first step toward a world view. Bedford, U. S. A., is a very small part of our world today. But looking carefully at that small part will help us greatly in learning how to look with understanding at other parts of the world, large and small.

To get an understanding of the world as a whole, we shall need to find answers to questions about how people make a living, what natural resources they use, how various groups of workers depend on each other, and so on. It is not hard to discover the answers to these questions in a small community. It is much more difficult to do so in the world community. That is why we shall look first at one small community, then at the whole world.

The Bedford community. The picture on the opposite page shows part of the community which we shall look at first. As the sign on the roof suggests, the name of the city is Bedford. It is in central southern Pennsylvania.

The people in this city, as well as those who live near-by, speak of Bedford as their "home town." They do most of their shopping there. They go to school or to church or to the movies in Bedford. All together, in city and country, they number about 5000 persons. These are the people of the Bedford community, a part of our world.

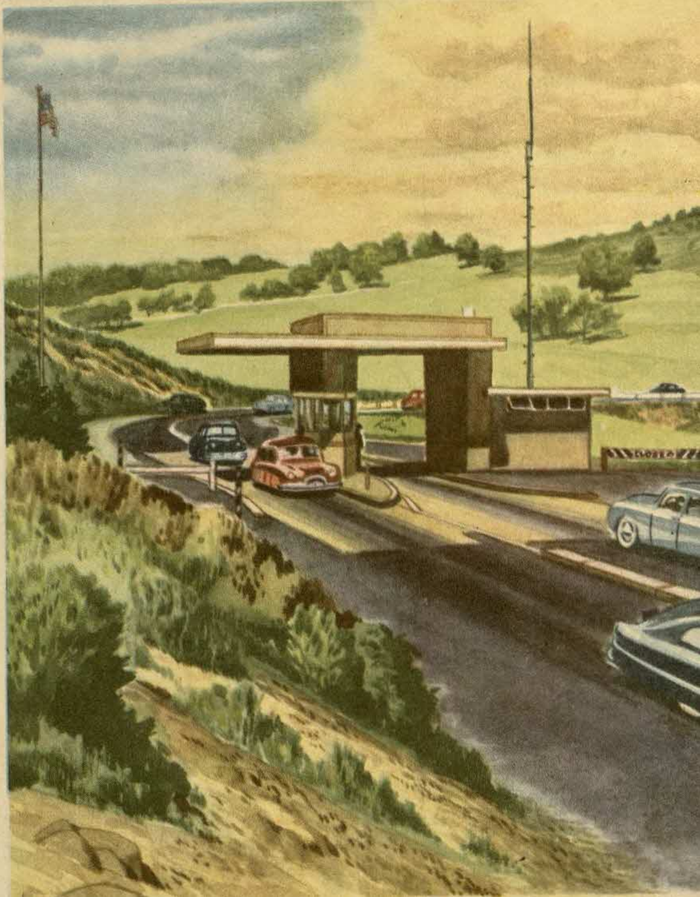
The city lies near a famous highway, called the Pennsylvania Turnpike. If you travel to Bedford by way of the turnpike, you turn off the highway when you come to the place shown in the picture on this page. The city of Bedford is only half a mile away. You can climb the steep hill north of the city and see the same view that is shown in Figure 1.

A city that grew at a crossroads. As the picture suggests, the city of Bedford is in a valley, partly surrounded by hills and low mountains. There are several advantages in this location. A city on a mountain ridge would be out-of-the-way and harder to reach. It was easier, also, to build the city on the valley floor than on the rocky slope.

The map on page 2 shows another advantage in its location. Bedford is in a gateway connecting several valleys. It is a place where the travel routes from several valleys meet. For miles around there is probably no better location for a city.

The place now known as Bedford was settled by white men about two hundred years ago. Even then men saw the advantages of the gateway location. They built a trading post and a fort at the site of the modern city. At that time the main routes of travel were the Juniata River and a well-worn path along its banks.

Figure 2. The road to Bedford *From photo by author*



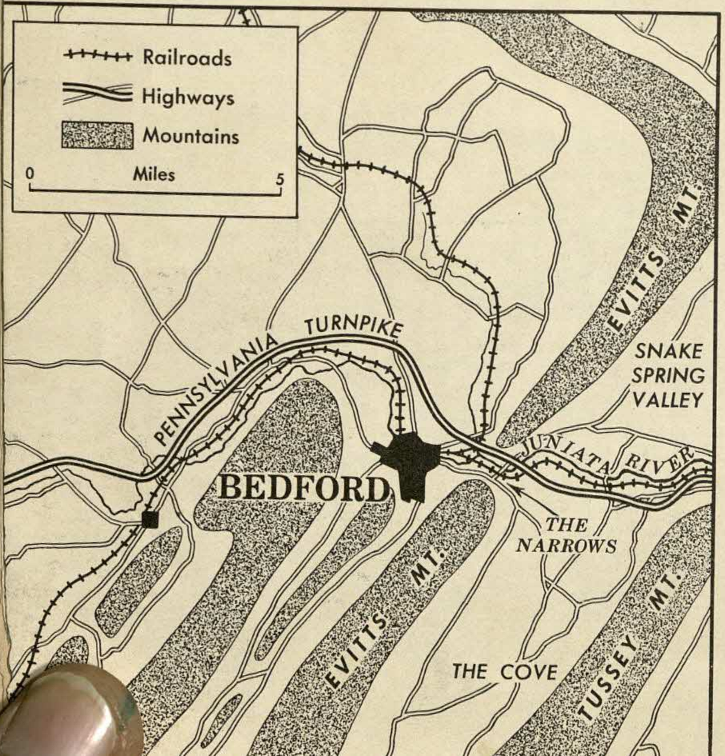
← Figure 1

As years passed, railroads and highways were built through the valleys to the city. Then the river was no longer an important travel route. Today one may travel in or out of Bedford by train, or by using any one of six different highways. Modern stores, garages, and hotels have taken the place of the old trading post. But one thing has not changed. The gateway which made this a good location for a trading post makes it a good location for a modern city.

The picture on the facing page was taken just east of Bedford, at "The Narrows," marked on the map on page 2. In the picture you are looking northwest through The Narrows. Bedford is just out of sight beyond the mountain ridge to the left.

By comparing this picture and the map on page 2, you will find that the highway in the foreground is just south of the Juniata River. Railroad tracks lie between this highway and the river. The almost straight highway that crosses the river bridge in the distance is the Pennsylvania Turnpike. Between the turnpike and the river there is another and less important highway which leads to Snake Spring Valley. It is easy to see from map and picture why this place is called The Narrows. It is also easy to see the advantages of Bedford's location.

Figure 3. The Bedford community



How People in Bedford Make a Living

There are many different ways of making a living in Bedford, as in most American communities of that size. Some people work directly with the *natural resources,* that is, with the resources that nature provides. These are the farmers, forest workers, and miners, who use the soil, forests, and minerals.

The other workers of the community are employed in various places, including factories, stores, offices, garages, and filling stations. These people do not make a living directly from the natural resources as the farmers do, for example. But, as you will see, they, too, depend on the natural resources.

On the farms. The first farms in the Bedford community were little clearings in the forest. But man's use of resources may change as the years pass. Today the farm lands are in wide strips, clearly shown on the land-use map on the next page.

At first it may seem strange that the farm lands, as a whole, take this particular shape. But a comparison of the maps on pages 2 and 3 makes the reason clear. The pattern of the farm lands follows almost exactly the pattern of the valleys. The forest lands in general are the mountain lands. In the valleys there is good soil, the farmer's great resource. On the mountain slopes the soil is poor. Trees, but not crops, will grow there.

The picture at the top of page 5 suggests dairy farming, the kind of farming that is most common in the Bedford community. The farmer who owns the cows in the picture grows much of the feed the animals need. This may include hay, corn, soybeans, and other crops. He cuts some of the corn while it is green and stores it in a silo for winter feed. His silo is seen in the distance next to the barn.

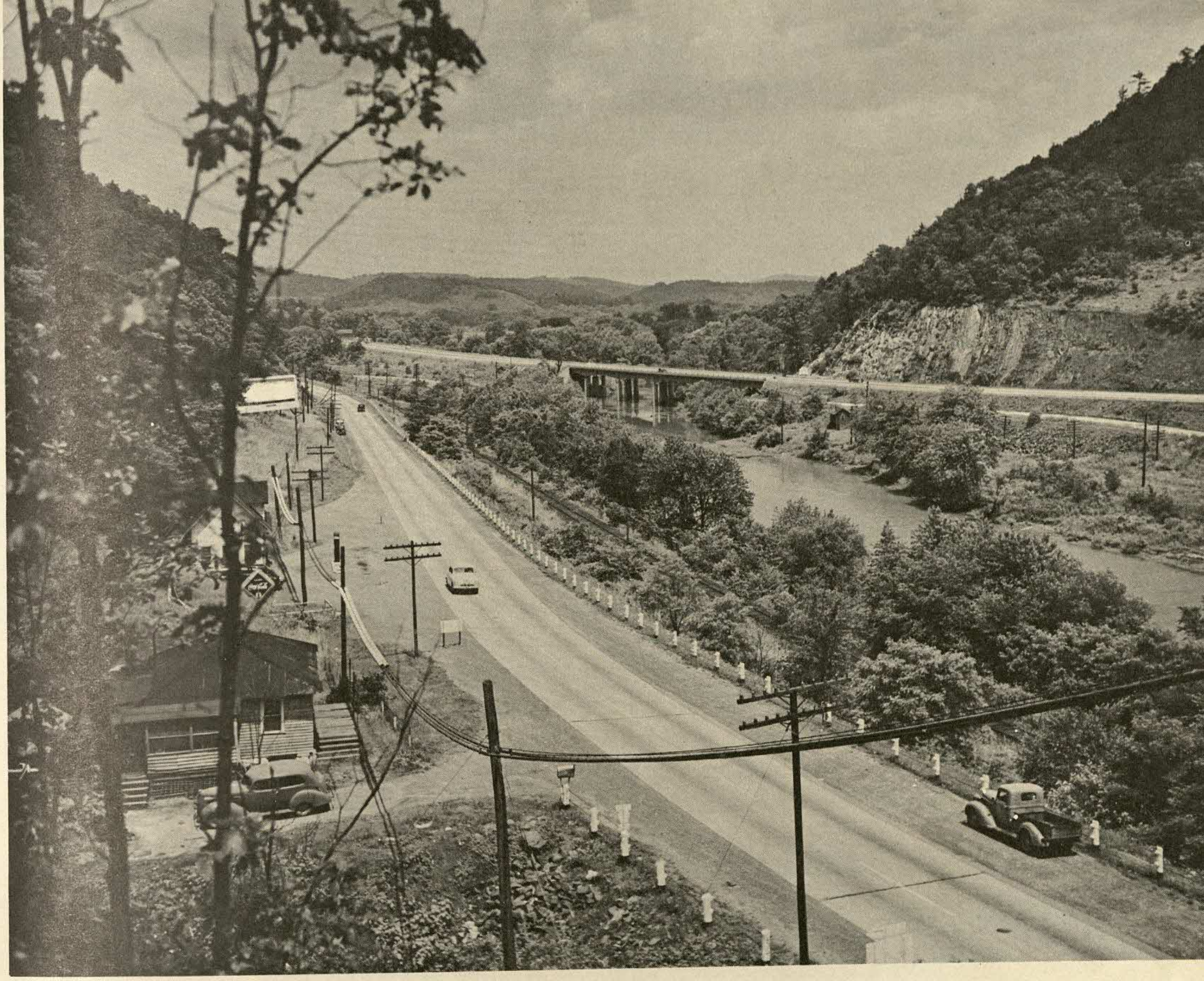


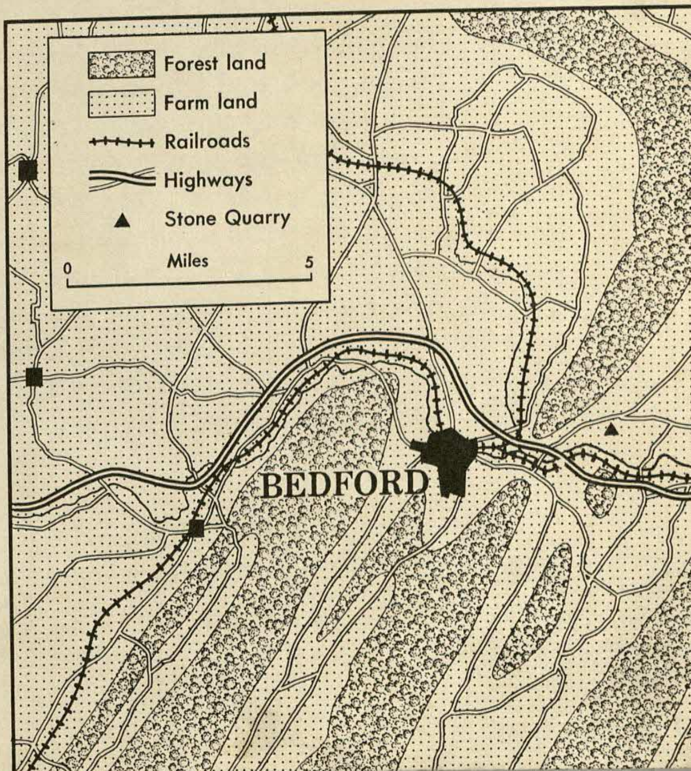
Figure 4. The Narrows

Photo by author

The second picture on page 5 shows part of another dairy farm. It is in the middle of "The Cove" (map, p. 2) about eight miles from Bedford. In the picture, the owner is cultivating corn on a bright, clear day in June. His home is the reddish brown house near the end of the corn field.

The boy in the picture is the farmer's son. His name is Boyd. A little earlier Boyd drove the cows to pasture, and now is on his way back to the house. In summer he spends much time out-of-doors, helping with the farm work. During the rest of the year he goes to school. Boyd knows the exact time in the morning when the school bus is due to stop on the highway in front of his home. It is seldom late, except on some winter days

Figure 5. Land use



when there is snow or ice on the highway. On a few days, Boyd has to stay home from school, because the roads are blocked with snow and the school bus cannot get through.

There are a dozen dairy cows on the farm. Boyd's father grows most of the feed that is needed for them. On his 160-acre farm he raises corn, hay, oats, barley, and soybeans. Sometimes the corn crop is large enough so that he can sell part of it. However, most of his money comes from the sale of milk, and not of grain.

This is a farm without horses. All the field work is done with machines pulled by the tractor in the picture. Boyd's father says he cannot afford to use horses. They must be fed through the year, whether they work or not. The tractor needs no feed when it is idle. On the longest summer days the tractor never gets tired. In autumn the corn is harvested by means of a corn-husking machine. Modern trucks carry the extra grain to market in Bedford and bring back machinery and other things that Boyd's father needs.

The highway that leads to Bedford is just beyond the trees on the left of the picture. Beyond these trees you can see Tussey Mountain in the distance. Mountains are in sight from every part of the Bedford community.

In the forests. Ever since the first settlers arrived, the forests have helped people make a living. The pioneers needed wood for fuel, furniture, houses, tools, and fences, and they got it from the trees that covered almost all the land. Logs from the forest were used when Fort Bedford was built. There were times, as years passed, when hundreds of men lived in logging camps. On a still day the sound of their axes could be heard far out in the valleys. At other times the forest seemed quiet and deserted. But always there have been some men at work, making a living from this great natural resource—the forest.

Today, many farmers get fence posts or fuel or rough timber directly from the forest. There are a few sawmills, too, at widely separated places in the mountains. Trucks carry many logs to the mills and carry the lumber away to cities, such as Bedford. Some logs are hauled directly to factories in Bedford, where men use the wood in making a variety of things.

It would be difficult to name all the ways in which the forest is useful. The people of Bedford have found pleasant places in it for picnics. During the hunting season men hunt wild game there. Of far greater importance, however, is the fact that the forest holds back rain water that otherwise would race down the valleys, carrying away good soil and causing floods in the lowlands.

By using mineral resources. The picture on page 6 shows a place near Bedford where a third natural resource is being used. This is a limestone quarry more than two miles east of the city (map, p. 3). Limestone is a mineral resource. A *quarry* is an open pit from which stone is removed. The men who do this work may be called miners.

After the limestone is taken from the pit at the left of the picture, it is crushed and treated in various ways in the large building. At the right of the picture, men are loading a truck with sacks of cement, made in part from the limestone. According to the sign which is partly hidden by a large machine, concrete blocks are made here, also. Concrete or concrete blocks have been used in constructing many of the buildings in Bedford.

In the city itself. The picture at the top of page 7 shows the main street of Bedford. For about three blocks this street is lined on both sides with business establishments of one kind or another. In the picture, you can recognize a bank, a hotel, a gift shop, a drug store, a shoe store, and a garage. Many places where people work in Bedford are not shown in this picture.

City workers may be grouped in many different ways. In geography it is common to

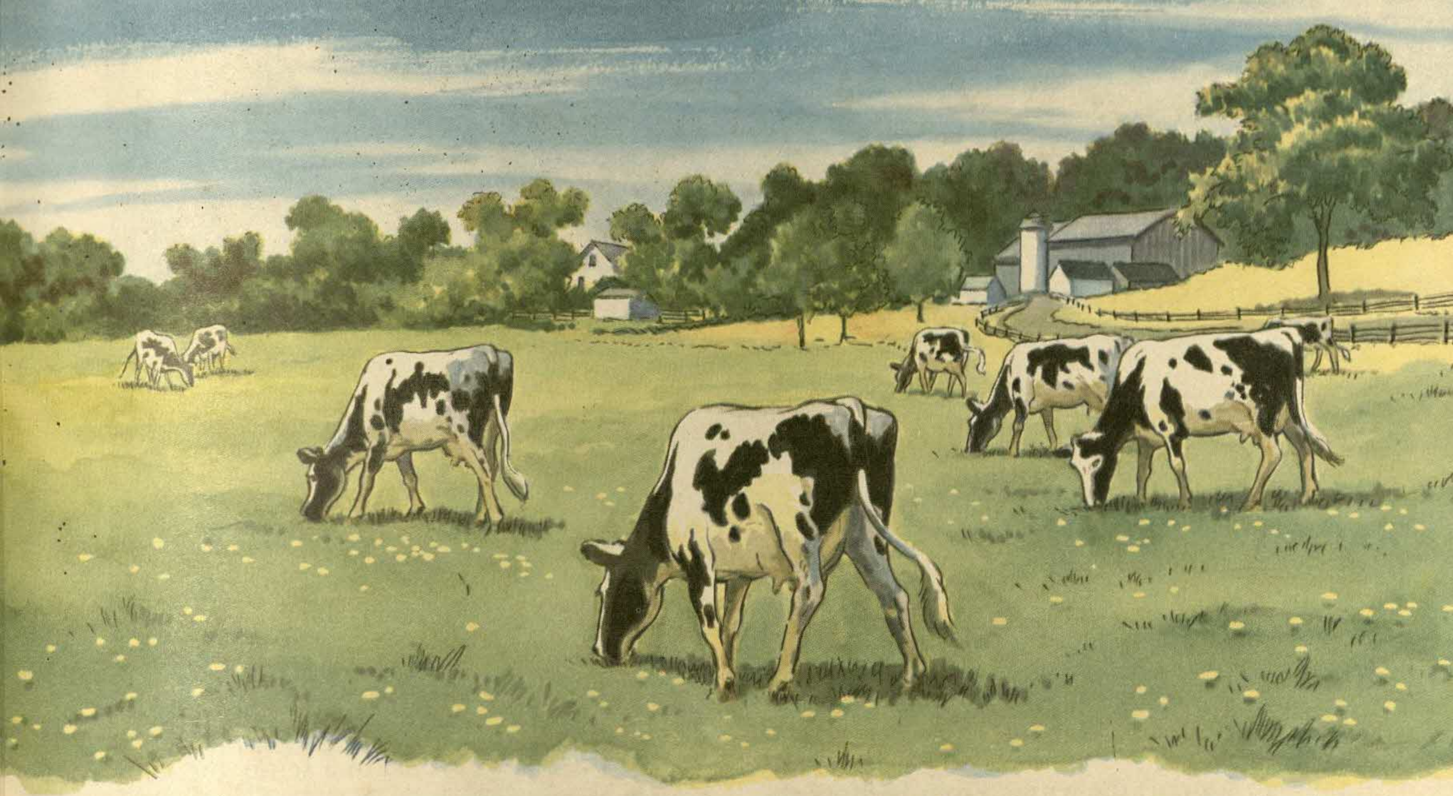
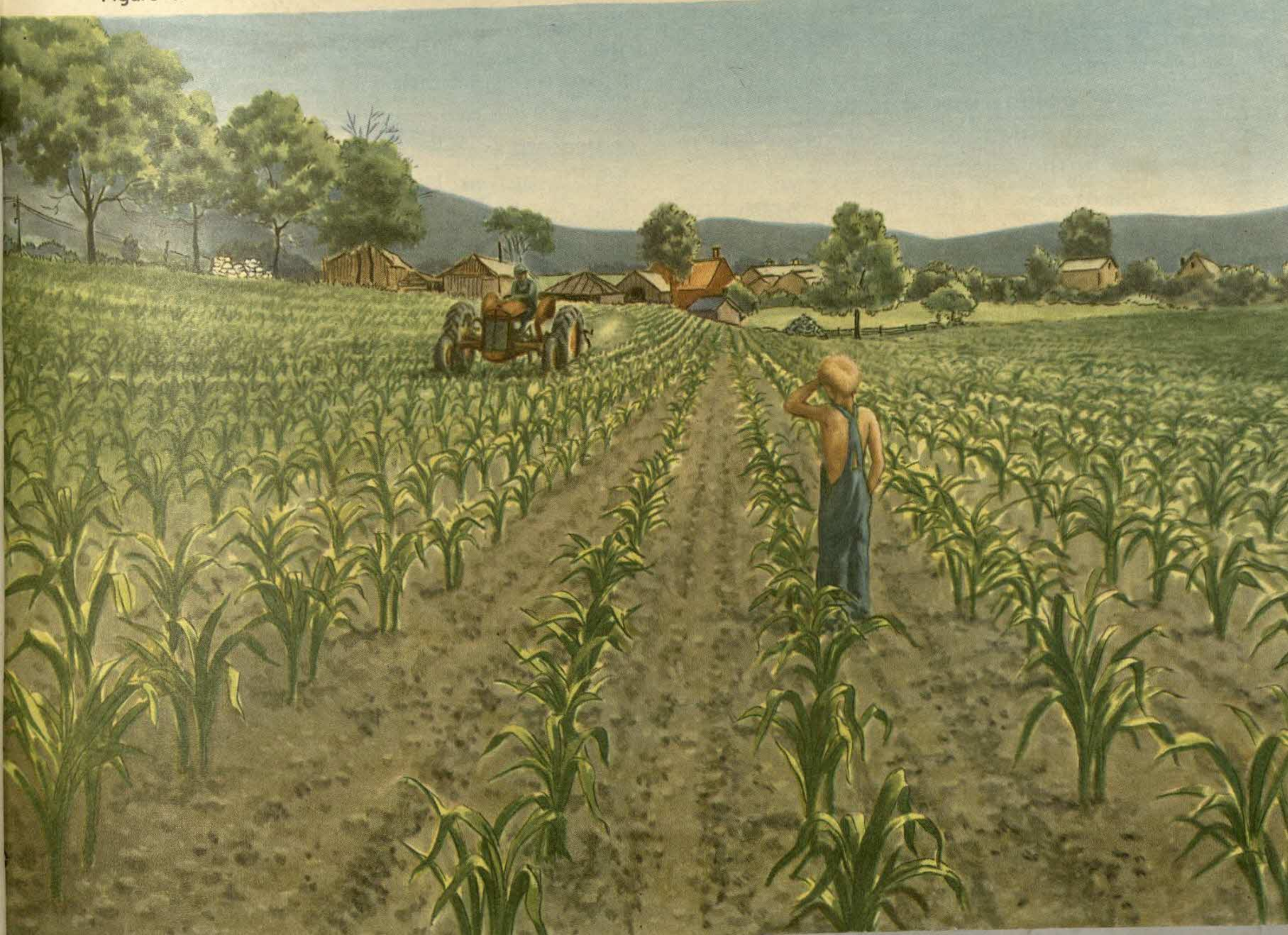


Figure 6. In the pasture

From photo by author

Figure 7. In the cornfield

From photo by author



speak of workers in manufacturing, trade, transportation, and special services.

In factories. The picture at the bottom of page 7 shows one of several factories in Bedford. It is near the eastern border of the city. The homes, half hidden by the trees, are part of the city. In the distance is Evitts Mountain (map, p. 2). The work in this factory is closely tied to forest work because, in the building, men make tool handles and other wood products from logs cut in the forest. This illustrates clearly how one group of workers depends on other workers.

In the western part of Bedford there is another factory called the "pin mill." It also uses logs in making wood products, particularly "pins." These pins are small wooden brackets which are fastened to telephone poles to support the wires. From Bedford the pins and other wood products are shipped to different parts of the United States.

Local materials are used also in other manufacturing plants, some large, some small. An ice cream factory makes use of milk and cream from near-by farms. A feed mill uses grains in making special feeds for livestock and poultry. Many of these feeds are sold to farmers in the community.

From trade. In Bedford, as everywhere else, *trade* is buying and selling, the giving of one thing in exchange for another, usually the giving of money in exchange for goods. People who make a living from trade are familiar to us all. They are the workers in grocery stores, meat markets, filling stations, department stores, and hardware stores. All of these and many other *workers in trade* may be found in Bedford.

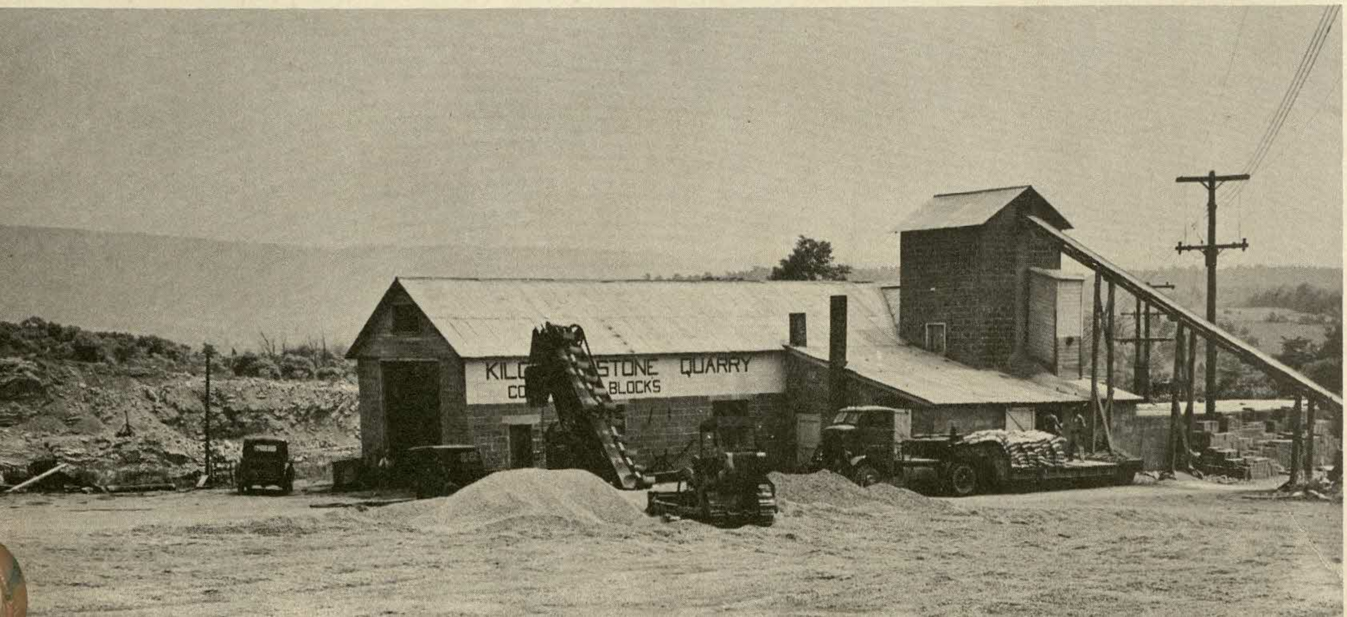
Actually, there would be no Bedford without trade. Without trade the factories would be forced to close their doors, the workers would get no food, the doctor would get no medicines. Trade is perhaps the chief reason for the existence of most cities in the world.

Trade in Bedford may affect people who live even in distant places. Consider the trade in the shoe store in the picture. It may be that this shoe store is, in a sense, the market for hides produced on a ranch in Argentina. The cotton in the shoe laces may have been grown in Texas and woven in New England. The iron in the steel nails in the shoes probably came from Minnesota. And the rubber for the heels may have been grown on a plantation in Malaya.

Trade is a two-way affair. Goods move out of Bedford as well as into it. People in Philadelphia buy milk that comes from farms in The Cove. A telephone company in Illinois may get pins from the pin mill.

Figure 8. Where limestone is mined

Photo by author



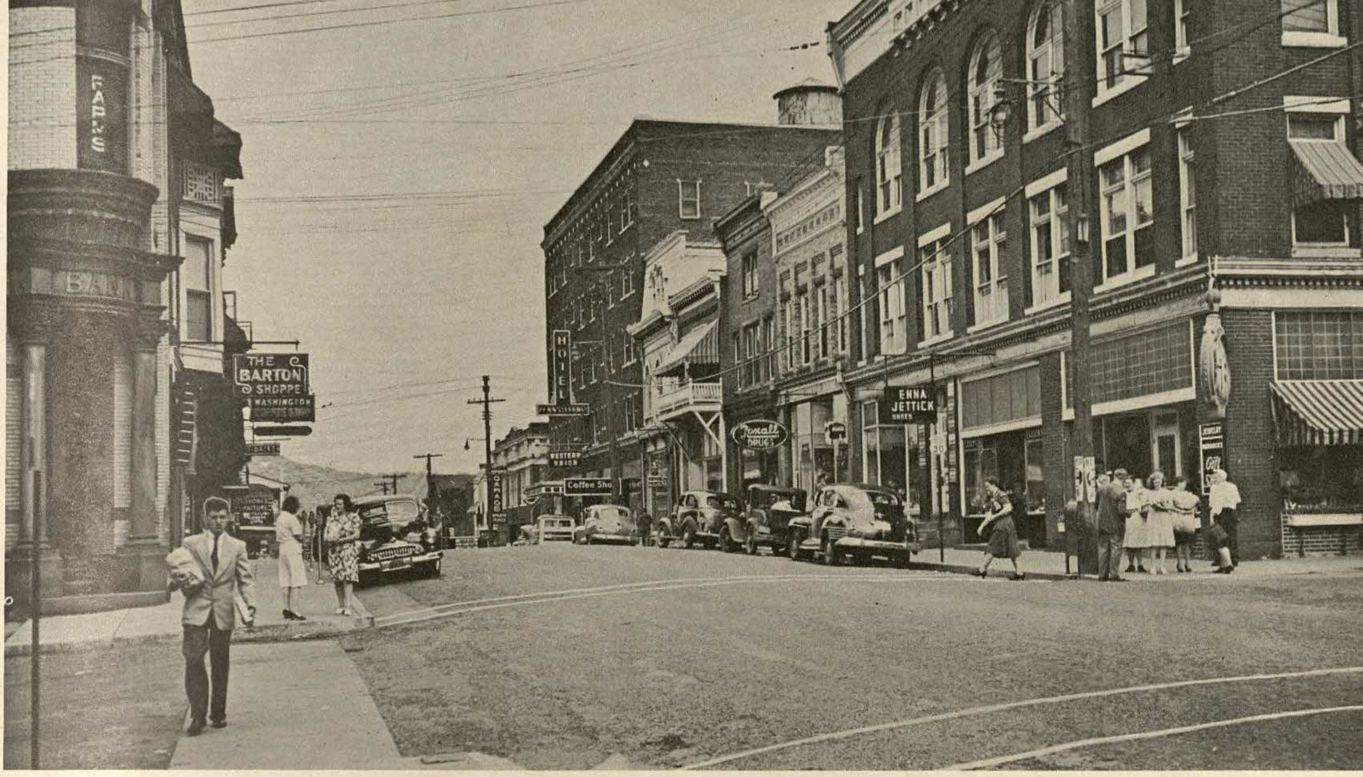
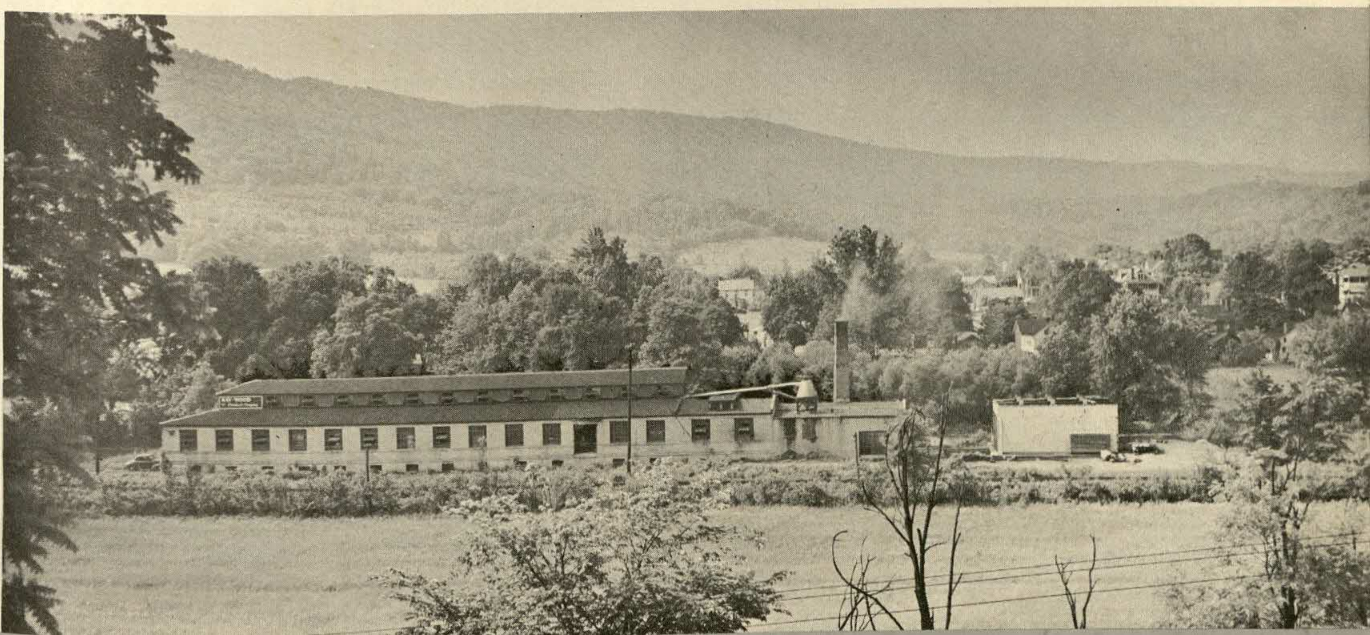


Figure 9. The main street in Bedford *Photo by author*

In transportation. Transportation and trade almost always go together. In fact there would be little trade without some moving, or transporting, of goods. All the things people want to buy and all the things they want to sell are rarely produced in one place. Products and customers must be brought together. People want to be transported from one place to another. Those people who make a living by transporting products or people are called *transportation workers.*

Bedford is wonderfully well equipped for transportation. There is a railroad that serves Bedford. As shown on the map on page 2, the turnpike is about half a mile away. And six other highways lead out from the city itself. One of these is the famous Lincoln Highway, which reaches from coast to coast—from Atlantic City, New Jersey, to San Francisco, California. In a single day, hundreds of people may travel through Bedford by bus. As you can readily see, many of the people in Bedford

Figure 10. A wood products factory *Photo by author*



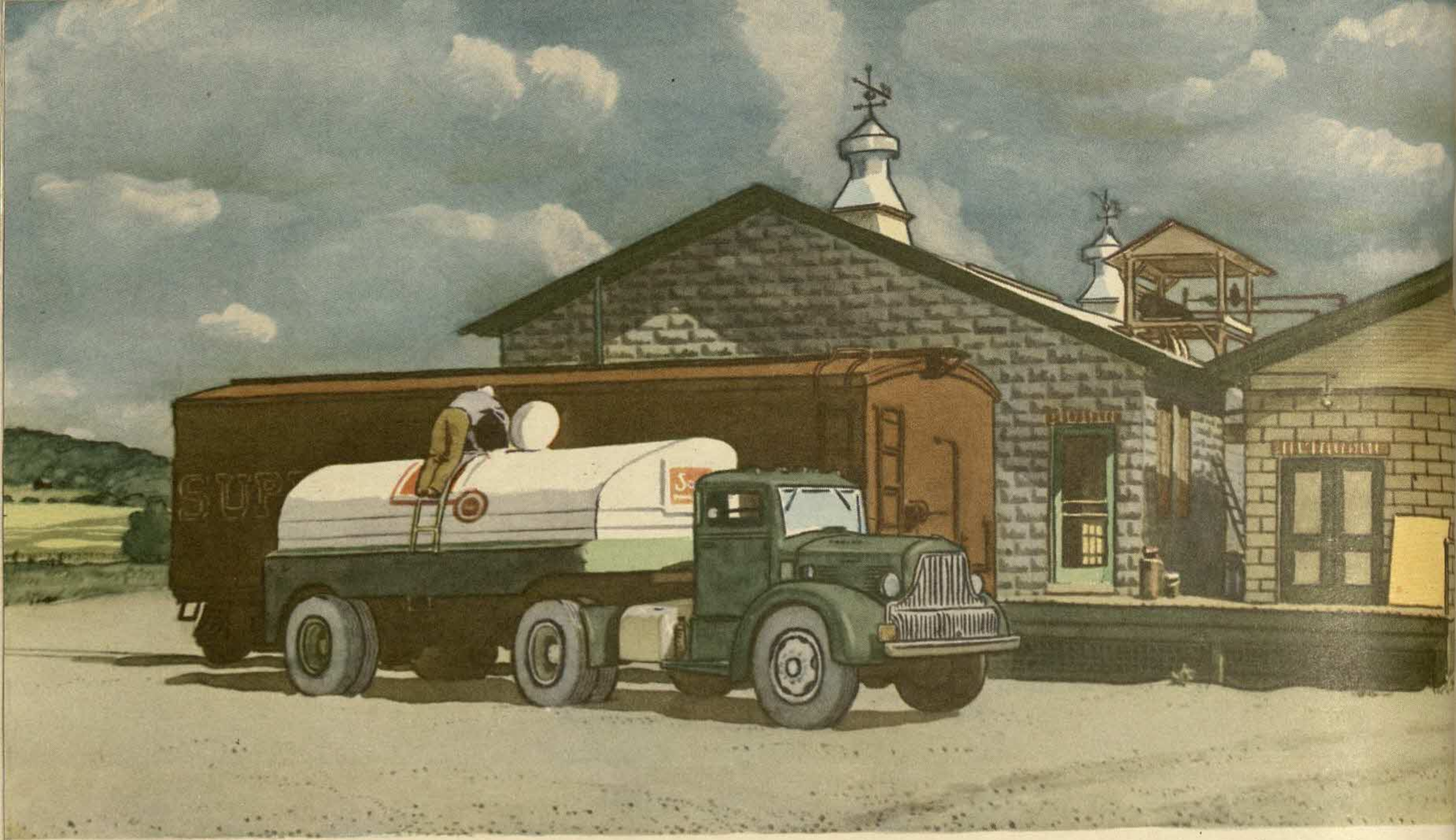


Figure 11. To market by truck *From photo by author*

are employed in keeping the automobiles, buses, trucks, and trains moving back and forth.

One of Bedford's transportation workers appears in the picture above. He is a truck driver. In the picture he has climbed up to see if the milk tank on his truck is full. As soon as it is filled, he will start on a 200-mile drive to Philadelphia. The milk in the truck may be on breakfast tables in Philadelphia the following morning.

Each morning smaller trucks bring hundreds of cans of fresh milk from farms to the building in the picture. Here the milk is cooled, so it will not spoil. Most of the milk is shipped away in trucks. In each truck there is a large tank, somewhat like a huge stainless steel vacuum bottle. The milk is kept clean and cool in these tanks, while it is transported to market.

In special services. A list of *all* the workers in the Bedford community would include

Figure 12. The courthouse *From photo by author*

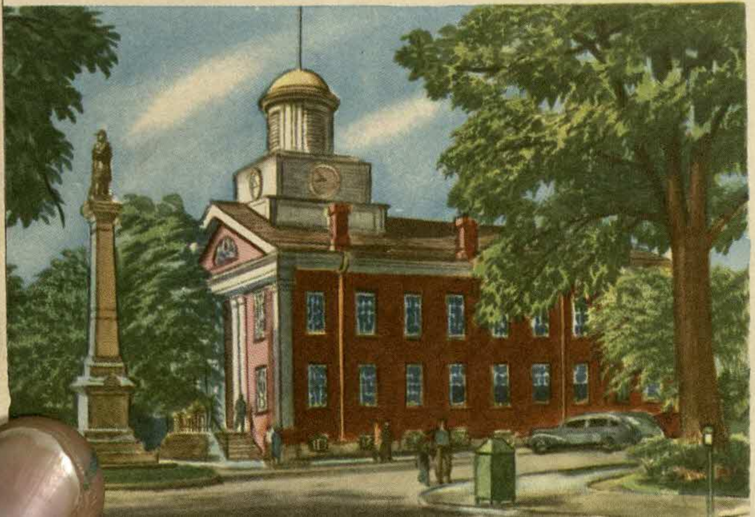


Figure 13. Help for the sick *From photo by author*

many besides farmers, forest workers, miners, and workers in manufacturing, trade, and transportation. There would, also, be workers in *special services.* These would include lawyers, doctors, carpenters, bankers, plumbers, bakers, funeral directors, and many more. The people in this group, as you can see, do many different kinds of work.

The bottom pictures on page 8 show two places where some special service people work, the county courthouse and a building in which doctors have offices. The courthouse is a center of government service for the people of the county. Here, or in near-by buildings, are the offices of the sheriff, the county judge, the county superintendent of schools, and other officials. As you know, every group of people needs some form of organization, or government, and government workers perform a service that affects each member of the community. Doctors and nurses care for the sick of the community. This, too, is a service, and a valuable one.

The other special services may not seem so closely related to all the people in the city, as are government work and medical work. Yet each worker, whatever his task, contributes something to the people in the community.

Many workers, one community. Though the different groups of workers in the Bedford community have been described separately, it is clear that they cannot live by themselves and for themselves alone. While each man is making a living, he is helping someone else make a living, who in turn helps another. In other words, all workers and all groups of workers are interdependent.

It is almost impossible to trace the effects of even one sale or purchase. If a farmer sells a can of milk, that helps him make a living. It also helps a truck driver who hauls the milk to Bedford, a garage man who sells trucks, a filling station attendant who sells gasoline, and so on. The farmer may use some of his money to buy groceries, furniture, or feed for his cattle. He may pay his taxes or a doctor's bill. Each of these people with whom the farmer has traded will, in turn, buy the goods or special services that he needs. Clearly, the effects of the sale of a can of milk are endless, even in Bedford.

Not only are all the people interdependent, but they all depend in one way or another on the natural resources. Without the flow of products from farms and forests and mines, there would soon be little to manufacture, to trade, or to transport. The work of special service people may seem far removed from the soil or forests or minerals. Yet their work can be traced back to the things that nature provides. A carpenter, for example, may build a house for a farmer who works with the soil, or he may build a house for a mechanic who buys groceries at a store which buys milk from a farmer who depends directly on the soil. Directly or indirectly, then, everyone in Bedford is dependent on natural resources. This is equally true of all people everywhere.

Clearly then, it is the responsibility of all people not to waste these resources but to use them wisely. This wise use is known as the *conservation* of natural resources.

An "Understanding Look"

At Bedford. When you looked at the picture of Bedford, facing page 1, you learned many things about the city. Now, however, the picture has taken on new meaning because you have looked behind the scenes, so to speak. The fields and tree-covered hills in the distance tell of men who make a living directly from soil resources and forest resources. The buildings within the city are not merely buildings; they are places where other people carry on their work of buying and selling, manufacturing, and so on.

A grocery store, for example, is no longer just a building or a place where one can buy groceries. Instead, it is a place of trade where the owner and the clerks are interdependent with the farmer, the doctor, and the painter. The post office is a government institution which serves the people of Bedford and which they, in part, pay for. The church towers tell of the religious interests of the people.

You can see now that there are two ways of looking at a community. One is the hasty look of a person who speeds through on the main highway. The other is the understanding look, in which one searches for the meaning of things, seeing each thing in its relation to other things. It is the understanding look that is profitable and rewarding.

From Bedford to a world view. The story of Bedford will be helpful to you in understanding your own community. In Bedford, you have seen how various groups of people make a living, which natural resources they use, and how one man's work is related to another's. Seeing these things in Bedford will help you recognize them wherever you live. And, recognizing these things in your own community will help you to understand it better.

The story of Bedford will help you, too, in getting an understanding view of the whole world. For the world is made up of many communities. Some are like Bedford or your own community. Some are very different. Yet you can increase your understanding of any community, anywhere, by looking at it as you looked at Bedford. Seeing the interdependence of people and the use of natural resources on a small scale is an important step toward seeing these things on a world scale.

Helps in Learning

1. Tell how the people in one business or profession in your community make a living. Do they work directly with natural resources? How does their work affect other people in your community?

2. The following words are headings copied from the classified section of the *Bedford Telephone Directory.*

Automobile Repairing
Banks
Beauty Shops
Bus Lines
Department Stores
Freight Companies
Furniture—Retail
Hardware
Hauling
Ice Cream Manufacturers
Laundries
Meat Markets
Newsstands
Physicians
Poultry Farms
Railroads
Schools
Stone Quarries

Each heading refers to a business or profession in the community. Copy this list of headings. Then write after each heading the one type of work that it suggests: farming, forest work, mining, manufacturing, trade, transportation, or a special service.

3. Suppose a forest worker sells some logs to the owner of the "pin mill." Show how this sale may affect at least five other people in Bedford.

4. Suppose all the transportation workers left the city of Bedford and *no others* took their places. What difference would this make to the restaurants? To the doctors? To the ice cream factory? To the city as a whole? How does this illustrate the interdependence of people?

5. Make a simple sketch map of the route you follow between home and school. Be sure to show which direction is north. Draw a little square for your home and mark it *H*. Draw a larger square for your school and mark it *S*. Then show on the map how the land is used along some part of the route. Use letters as follows to stand for different uses of the land:

R—Residential (either a separate home or an apartment)
MF—Manufacturing
T—Trade
TR—Transportation
SS—Special Services
F—Farming
FW—Forest Work
M—Mining

What is most of the land used for in the area which you have mapped?

If you wish, you can add to this land-use map, as you come and go during the weeks ahead.

6. When men built the railroad shown on the map on page 2, they chose a route which clearly fits the land in that area. Use the map in explaining why you think they chose this route.

7. Make a list of the different kinds of transportation in your community.

THE TOOLS OF GEOGRAPHY

Helps in studying our world. Before starting out to get a world view, let us lay out the tools we will use and look at them. What are the tools of geography? In general, anything that helps us learn about lands and people is a *geographic tool.* In learning about Bedford, for example, we made use of pictures, maps, and the written text. We may expect in our study, also, to use globes, statistics, and graphs. All together, these tools of geography help us see and understand the world. In a sense, they bring the world to us.

Written Text

You have been learning to use the written text ever since you started to school. Each year you have gained more and more experience with it. In getting a world view you will need to use this tool constantly. Some few people are able to travel widely through the world and see much of it first-hand. The next best thing is to read about the world in books of many kinds. Using the skill of reading with the tool of the written text will open wide the doors of the world to anyone who is interested.

Maps

The map idea. In the world today there are thousands of different maps. Some of them may seem complicated and hard to understand. But the map idea itself is really simple. A *map* is a kind of drawing made to represent some part of the world. On this drawing, the different signs stand for real things in the world.

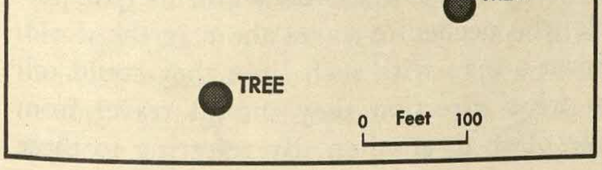
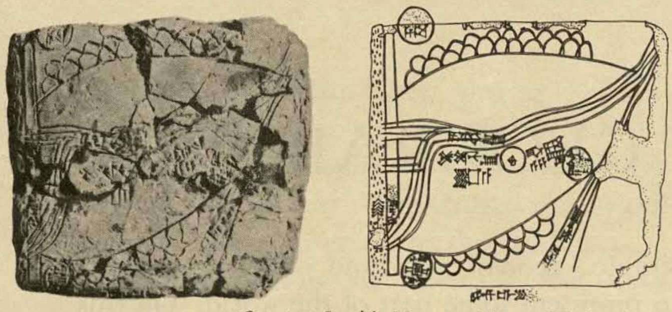


Figure 14. A simple map

Let us suppose that you see three trees in a field. You might be able to describe in words exactly where they are. But it is much easier, and better, to make a drawing, perhaps like Figure 14. This simple drawing is a map. It shows a field which is part of the earth's surface. And it uses signs to show what you really could see in the field.

The first maps. No one knows when some man made the first map. It must have been long, long ago—thousands of years ago. Probably the first map was very simple, showing a small area which some one person knew about. Perhaps a successful hunter marked in the sand the route which he had followed so that others might also find wild game. Or it may be that a desert nomad made scratches on a piece of leather to show where wells were located and what routes connected them. Or a farmer may have made a sketch of his fields to show which land was his. However it happened, the first map maker did as all map makers have done since. He made a drawing or drawings to show what a part of the real world was like.

All of these early maps perished long ago. The rain leveled the sand, and the leather rotted away. The oldest map known today is shown on page 12 (Fig. 15). Beside it is a drawing which shows more clearly what the map was meant to show. The map maker had seen a river flowing through a valley, with mountains on each side. He marked the signs for these things on a little piece of wet clay. Today, almost 5000 years later, we can learn what he saw because we can read the signs on his map.



Courtesy Semitic Museum, Harvard University

Figure 15. The oldest known map

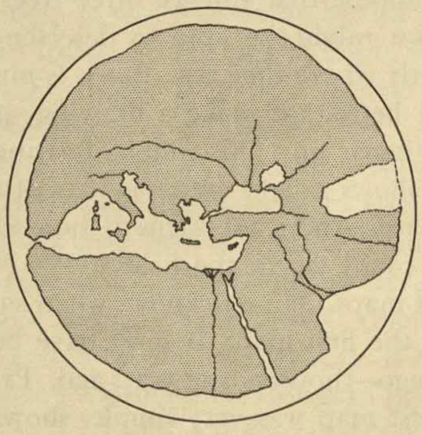


Figure 16. An early world map

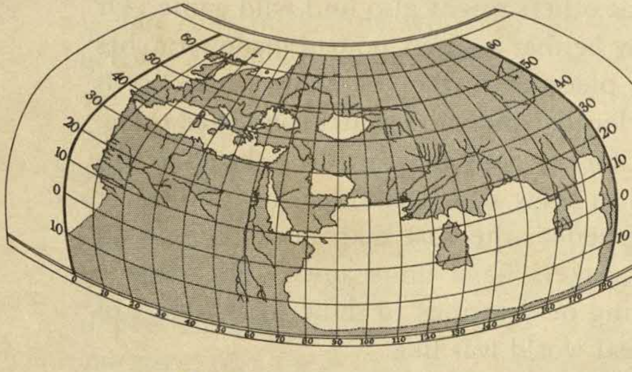
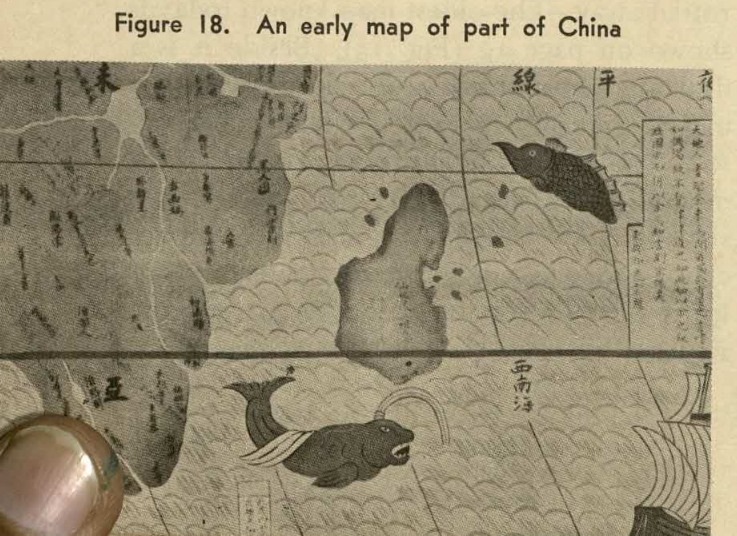


Figure 17. The world which Ptolemy knew

Figure 18. An early map of part of China



Fitting maps together. Long after the first map was made, showing an area which one man had seen, people began to fit maps together and to combine the information shown on many different maps. In this way they could combine the knowledge of many men. Before that time there was scarcely any way of learning about lands beyond the horizon. But with maps one person could "see" far more than he could see with his eyes. In fact, people could "see" lands which were hundreds, or even thousands, of miles away.

In time men tried to make maps to show the whole world. Figure 16 shows what one of these early maps probably looked like. We can recognize the Mediterranean region, since the map maker had real maps of that area to work with, maps based on direct observation. But he had no record of what the other parts of the world looked like. So he guessed at them, and made some great mistakes. He drew a saucer-shaped earth of three continents, surrounded by a "world ocean." This map showed, in general, what people at that time believed the world was like.

Maps by Ptolemy. As years passed, some men came to believe that the world was round, like a ball. Some geographers then drew maps to show what their lands would look like on a ball-shaped earth. Figure 17 shows such a map. A map of this kind was drawn by a famous map maker, named Ptolemy, who lived in Egypt nearly 2000 years ago. The map shows only part of the earth, for Ptolemy did not know what the rest of the world was like.

Ptolemy was one of the first map makers to use numbered direction lines on a map. As the map shows, one group of lines extends east and west, another north and south. These direction lines were a great help to people who needed to travel about in the world. From a map with such lines they could tell in what direction they should travel from one place to another. By referring to these lines they could also, for the first time, learn the exact location of various places. The people of Europe used Ptolemy's maps for more than 1000 years. Until about the time of Columbus they had no better map of the world.

Early Chinese maps. The people of northern Europe and of Mediterranean lands were not the only people who learned to make and to use maps. In early times the Chinese, for example, made drawings to show the parts of the earth which they saw. The maps of their cities were fairly accurate, but they knew little about the parts of the world that were far distant. Most Chinese maps of Europe were as inaccurate as the maps Europeans made of China.

Figure 18 shows a small part of an early map of China. You may not be able to read Chinese, but you can read some of the material written here in map language. The signs for rivers, coast lines, islands, and the ocean are entirely understandable. On many old maps it is common to find drawings of fish and animals.

When Columbus sailed west. More than 450 years ago, at the time of Columbus, many people in Europe still thought the earth was shaped like a saucer. To them, Figure 16 would have been a satisfactory world map. Other people, including Columbus, believed as Ptolemy did that the earth was round. But even they did not have a very clear picture of the world. There is no trace of the American continents on their maps. They thought that it would be only a short distance west from Europe to the Indies, that is, southeastern Asia. Naturally, therefore, Columbus thought that he had arrived in the Indies when he reached islands off the shore of North America.

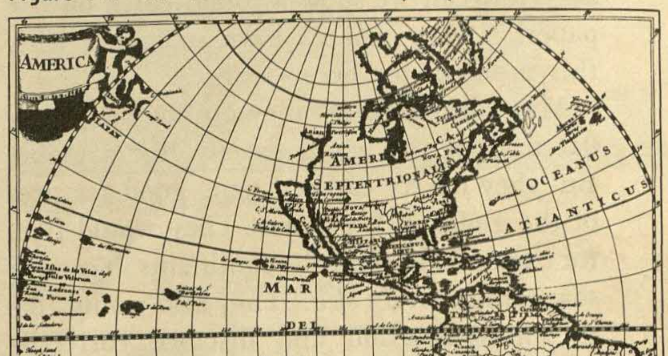
Filling in the world map. Little by little the explorers who followed Columbus filled in the rough outlines of the American continents. It was a tremendous task, because someone actually had to see a place before it could be marked on a map. They made many mistakes, too. More than 150 years after Columbus, the best map of North and South America looked like the one shown in Figure 19. Clearly there was much exploring yet to be done.

Year after year the map work went on, in the Americas and all around the world. Tirelessly, men traveled through jungles, over mountains, and across great deserts, measuring the land and making thousands of small maps.

When men tried to make maps to show correctly the entire world, they of course could not do it by fitting together and combining various flat maps on a table or a floor. The world is shaped like a ball, and the maps of the various parts of the world could be fitted together correctly and combined only on a ball. So the map makers made a ball-map—the *globe*. One of the early globes was called an "earth-apple."

The globe maps on page 14 were made from three photographs of a modern globe. The darker areas show the inhabited continents and major islands. The direction lines used on Ptolemy's map have been extended all over the globe. By means of these globe maps we can "see" the world as a whole. This was impossible for all the many millions of people who lived on the earth from earliest times until modern times. They did not have

Figure 19. The New World as early explorers saw it



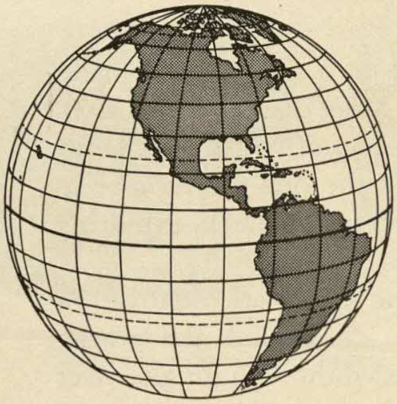


Figure 20

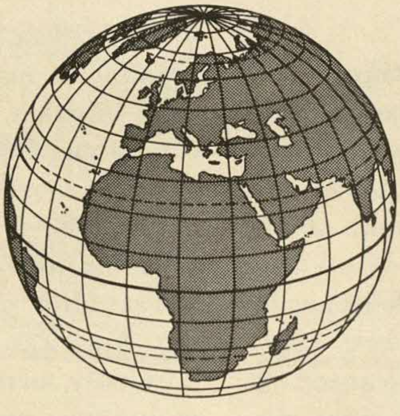


Figure 21

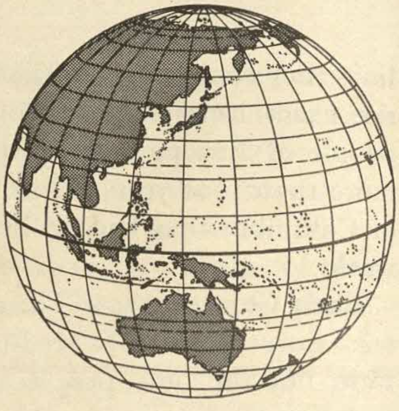


Figure 22

the tools that were necessary to help them get a world view.

In spite of all the maps and globes which we have today, the work of mapping the world is not yet finished, and it never will be. For many areas we need more accurate maps than those which now are available. Every year new highways are built, storms and tides may change the coast line, and rivers may cut new channels. As the world changes, so maps must be changed, if we are to "see" the world as it really is.

Flat maps of a round earth. The globe map accurately represents the round earth, but it has disadvantages. It is expensive to make. It is clumsy to carry. A person can put several flat maps in his pocket, but he cannot very well carry a globe in his pocket. Furthermore, globes cannot be made large enough to show all the details in which people are interested. Thus the great problem is, "How can we show a round earth on flat paper?" Map makers have struggled with this problem for many years.

Map makers know they cannot make any flat map of the world exactly like a globe. But they do try to keep some good features of the globe in flat maps. They would like, for example, to show the continents in correct shape and correct size. They also would like to show direction and distance correctly. They have learned, however, that they cannot get *all* of these good features in a single map. They must decide which features they want to keep, and which they are willing to lose.

Making a globe photograph is one way of showing the round earth on flat paper. The maps above are made from photographs of the globe. Their great advantage is that they show just how the various lands look on a globe. Yet even a globe photograph cannot have all the four good qualities mentioned above. If, for example, you compare these globe pictures with a real globe, you will notice that any land near the edge of a globe photograph has an unusual shape. This is due, of course, to the curving of the globe's surface.

The drawings on page 15 show three other ways of mapping the round earth on flat paper. The map in Figure 23 is sometimes called a Mercator map, after a Dutch map maker who lived almost 300 years ago. He used this arrangement of lines in designing a map for sailors to use, and a good sailing chart it was. Later the map came into more general use, although in some ways it is very unsatisfactory for studying the world as a whole. For example, you cannot compare accurately the sizes of various lands on this map. On a Mercator map, North America is larger than Africa. But the globe shows that North America is really smaller than Africa.

Polar maps, like the one shown in Figure 24, have become rather popular in recent times. But this is not a new kind of map. A map somewhat like the one shown here was used in France nearly 200 years ago.

The chief advantage of a polar map is that it shows how Europe, Asia, and North America face each other across the Arctic Ocean. On this map, therefore, it is easy to mark some of the air routes that connect those continents, especially the air routes near the Arctic Ocean. But this polar map, like all flat maps of a round earth, also has its disadvantages. Comparing Australia and South America on this map with the same continents on the globe will show one of the disadvantages—namely, that on this kind of polar map, lands far from the center of the map are shown too large and in strange shapes.

The kind of map shown in Figure 25 will be used frequently in this book for various reasons. The shapes of the continents are good. Also it is an equal-area map. By this we mean that the size of any country may be compared with that of any other country as accurately as on a globe. This is of great importance in studying world geography—in getting a correct "world view."

These are only a few ways in which the round earth may be shown on flat paper. No one way is the best way. Each of the different flat maps has advantages and disadvantages. We must choose the map that is best for the use we wish to make of it.

Many kinds of maps. Today the map makers of the world have gone far beyond the marking of coast lines and continents. Men have made many different kinds of maps that show different things about land and about people. Maps of different kinds are included in this book.

One familiar type of map uses color to show differences in elevation above sea level. The maps on pages 230-231, 382, 383, 386-387, 390, 391 and 394 are of this kind. The colors do not show exactly the elevation of any one place. Each color shows only that the areas in that color are between two given elevations. For example, the yellow on the map on page 382 shows areas that are between 1000 and 2000 feet in elevation above sea level. Any particular place in the yellow area may have an elevation of 1001 feet or 1999 feet or some figure in between. The exact elevation of any one place is *not* shown by this color.

Dot distribution maps, such as the one on

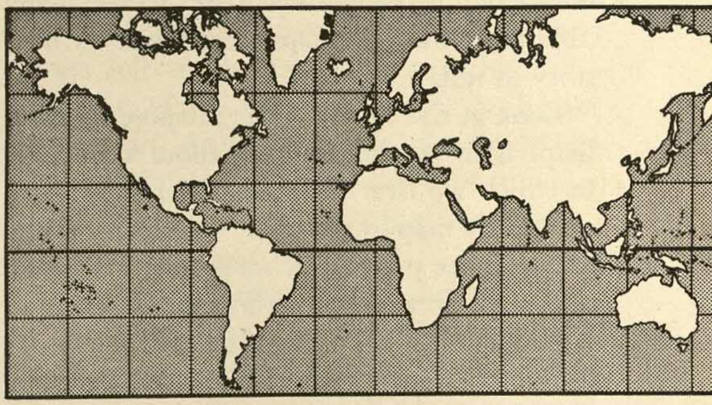


Figure 23. A Mercator map

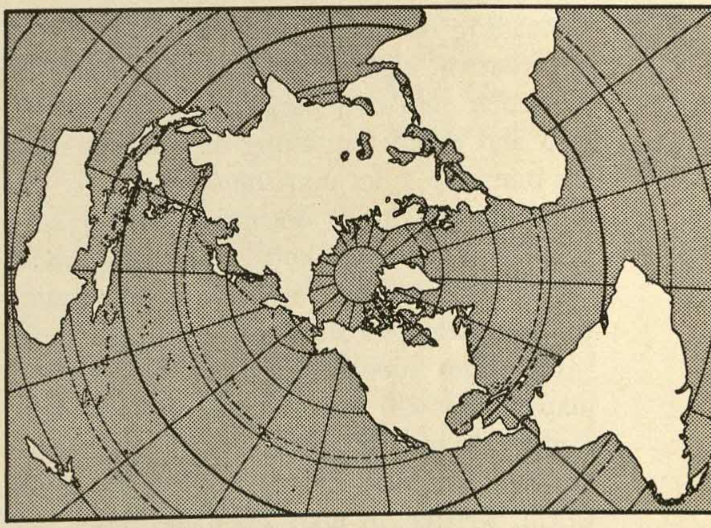
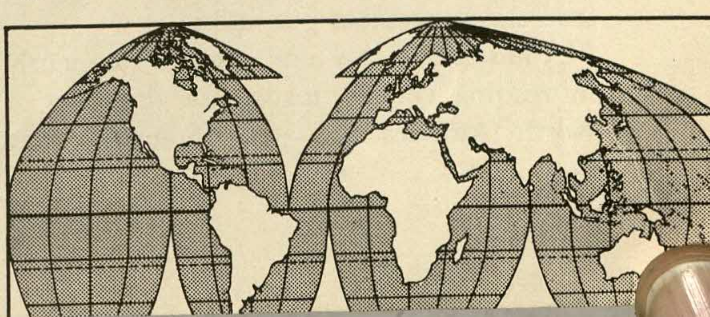


Figure 24. A polar map

Figure 25. An equal-area map



pages 370-371, may be used to show how people, or perhaps cattle, or fruit farms are distributed over a given area. On rainfall maps (pp. 372-373), different shadings are used to show how much rain there is in an average year in certain lands. The map on page 2 is a special-purpose map of the Bedford community, showing transportation routes and mountain lands, among other things. Road maps are in use the world around. One could go on naming others, for men have learned to make and to use many different kinds of maps. Each has its own story to tell.

Look at the legend. The purpose of using maps is to get information about the world in which we live. And this information was put on the map by someone. Sometime, somewhere, some person saw something and put a sign for it on a map. We need to use this sign if we would "see" the real thing in the world for which it stands. Therefore, the first step in reading maps is to *look at the legend.* The legend tells the meaning of the signs the map maker has put on his drawing.

Reading the legend on one map may not tell what the signs on another map mean. A particular sign may mean one thing on one map and a different thing on another map. On one map a dot may stand for a city. On other maps a similar dot may stand for 1000 people, 50 acres of corn, or a gold mine. Clearly, then, before you begin to read a map, you must learn the meaning of the signs on it.

On pages 368-395 there is an atlas of 18 maps. You will want to refer to this atlas frequently in your work. It is a great storehouse of interesting information about the world, written in map language. However, when you turn to a map, be sure to look at the legend. Otherwise, you might possibly read quite different things out of the map than the map maker put into it.

A mistake of this kind is made frequently in reading colored maps, like the map of North America (p. 382). Someone may glance at that map and say that it shows where the mountains are. But that is not exactly true. The legend shows plainly that each color refers to a certain "Elevation in feet," that is, how high the land is above the sea. But knowing the elevation does not tell us whether or not the land is mountainous. As we all know, some high land (shown in brown on p. 382) may be almost level, as is much of the high land in northern Mexico. Some low land (shown in green on p. 382) may be rather hilly, as is much of the land along the Ohio River. Of course, much high land is mountainous, and much low land is nearly level, but it is not so in every case. All of this emphasizes the need for reading the legend of a map thoughtfully.

Study the scale. Since earliest times people have asked "How far is it?" Every one of us has asked the same question. The early hunters probably answered this question in terms of travel time, "It will take you about two days to reach the hunting grounds." We, too, hear it said, "It is about an hour's trip." But such measurements of distance are not very exact. An hour's trip is about three miles if you walk, perhaps 20 miles if you drive on a poor road, perhaps 50 miles if you drive on a good highway. And if you fly, you may travel from 100 to 500 miles in an hour.

Many years ago map makers realized the need for putting measuring lines on their maps. These give definite answers to the question "how far." The measuring line on a map shows what *scale* is used on that map.

In this book there are maps on many different scales. That is, an inch on one map may stand for 100 miles on the earth's surface. On other maps, on a different scale, an inch may stand for 50 miles or 1000 miles. In each case the map maker chose a particular scale because of what he wanted to show.

The three maps of Bedford, on page 17, illustrate why maps having different scales are needed. The first map shows Bedford in its local setting.

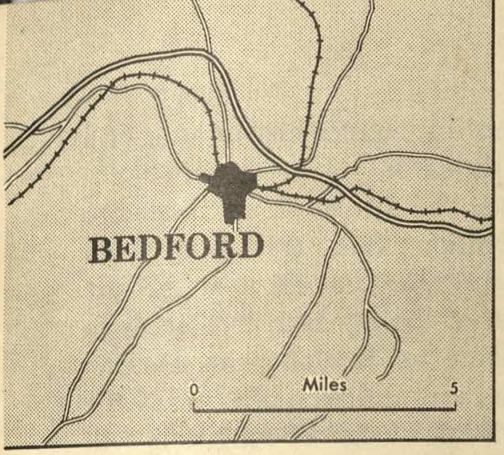


Figure 26

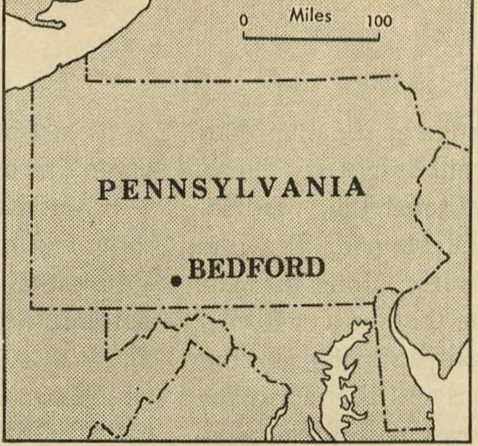


Figure 27

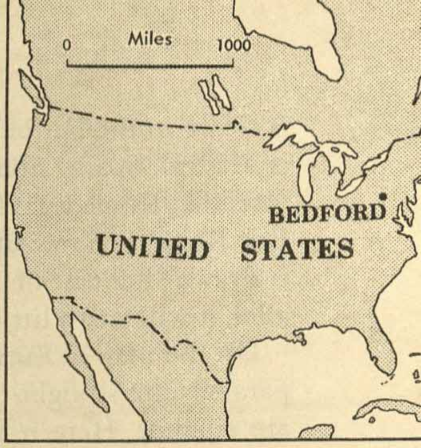


Figure 28

The second map shows Bedford in its relation to the state of Pennsylvania. This map shows much more area than the first map, but it can show much less detail. The area covered by the dot that stands for Bedford on this map is more than ten times as great as the area of the city itself on the first map. In gaining a view of the state, we lost the view of Bedford's local surroundings.

The third map shows still more area—Bedford in the United States. On this map, ⅞ inch stands for about 1000 miles. Think of all you could see on a trip of 1000 miles from your own community. Try to pack all of that into ⅞ inch, and you will see why on this map the local detail is lost. On this map, the dot which stands for Bedford covers an area that is about 35 miles across. Clearly, on such a map details about any community cannot be shown.

The choice of scale, then, depends on what one wants to show. We cannot show both local detail and great area on one map any more than we can have a photograph of a wide valley that also shows clearly every single leaf on every tree. As there are close-up pictures, there are close-up maps of small areas. There are general views of large areas, both in pictures and in maps. No one picture or map can give both a close-up and a general view at once.

Watch the direction lines. No one knows when men first spoke of definite directions—north, south, east, and west. Certainly it was long, long ago. Even in early times, before the compass was invented, people could be sure of their directions. The noon shadows always fell in the same line—north-south—regardless of the time of year or the height of the sun. And the people who could see the star that we call the North Star found it was always in the same direction from them—straight to the north.

In time, men began to mark direction lines on their maps. As we noted, Ptolemy's map, page 12 (Fig. 17), has a network of these lines. The east-west lines run in the same direction as the equator, that is, they are parallel with the equator. They are called *parallels.* The north-south direction lines are called *meridians.* This is a good name for them, because the word meridian means midday. Meridians are the signs on a map for midday shadow lines.

Parallels and meridians may be drawn as straight lines or as curved lines. It all depends on which plan is used for showing the round earth on flat paper. On some of the maps on pages 368-395, there are meridians which are straight lines. On some the meridians are curved lines. In the same group of maps some parallels are straight lines, some are curved. Regardless of whether a parallel or meridian is curved or straight, it always is a true direction line.

The edge of a map is never a safe guide in telling directions. The map of Western Europe on page 394 illustrates this. On this map the parallels are curved, the meridians are straight or nearly straight. Rome, in Italy, is closer to the bottom edge of the map than is Madrid, Spain. Someone might say, therefore, that Rome is farther south than Madrid. But Rome is *northeast* of Madrid. If a line is drawn due east of Madrid, along the parallel, it will pass a little to the south of Rome.

On the map of Eurasia, pages 386-387, the parallels are straight lines and the meridians are curved. Here it is easy to tell east-west directions, the direction of Rome from Madrid, for example. It also is easy to tell north-south directions, *if* you watch the meridians. Thus an airplane trip due north from Lisbon, Portugal, does not take you west of Iceland. It takes you over part of the British Isles instead, north along the meridian. Manila, in the Republic of the Philippines, is due south of Shanghai, China, and not south of Japan as you might think if you did not watch the direction lines.

Somehow, during the years, many people have come to believe that north is always toward the top of a map. But this is not true. True north is the direction toward the North Pole. It always may be found along a meridian, even if the meridian is curved, and even if it does not point directly toward the top of the map.

The map on page 379 suggests how important it is to keep this in mind. Here the North Pole is at the center of the map. In general, therefore, at the bottom of this map, north is up. At the right side of this map, north is to the left. At the left side of the map, north is to the right. At the top of the map, north is down. This may be confusing, but it need not be—if you watch the direction lines.

Latitude and longitude. A network of numbered parallels and meridians on a map not only serves as a guide to direction but also makes it possible to find the exact location of every place on the earth. In describing location two words come into use—latitude and longitude. *Latitude* is distance in degrees north or south of the equator. *Longitude* is distance in degrees east or west of a given line on the earth.

Both latitude and longitude are needed to show exact location. It is not enough for a ship captain to know that he is at the 30° parallel, north of the equator. He needs to know also where he is along this parallel which stretches east and west all around the earth. Only a knowledge of longitude will give him that information.

A degree, as you know, is not a certain number of miles. Instead, it is a certain part of a circle, whether that circle is an inch in diameter or a thousand miles in diameter. Every circle, large or small, is made up of 360 equal parts, called *degrees*. It is about 25,000 miles around the earth. Thus one degree of latitude is 25,000 divided by 360, or about 70 miles. Everywhere on the earth, this is true: one degree of latitude is about 70 miles. Looking at the globe will show you, however, that the length of a degree of longitude varies according to the distance one is from the equator.

The equator was a natural starting point for measuring latitude. It is exactly halfway between the North Pole and the South Pole. But there is no east pole or west pole. Ptolemy's map, page 12, shows that he measured longitude from the western edge of his map, which was also the edge of the known world of those times.

At different times since then, men have measured longitude from various places. The people of some countries have measured longitude from their own national capitals, from Washington, D. C., Madrid, Spain, or Paris, France. The British measured it from Greenwich, a village near London. Finally all the nations agreed to measure longitude from the meridian passing through Greenwich, England. This meridian, 0° longitude, is now known as the *prime meridian*. The location of every place in the world may be described in terms of distance in degrees from the equator and from the prime meridian.

The map of Eurasia, pages 386-387, is particularly useful in illustrating how this system of location works. By glancing at the numbers at the top of the map you can easily locate the prime meridian, marked 0°. Glancing down the side of the map you find the parallel also marked 0°. This, of course, is the equator. Suppose that you wish to describe the location of Cairo, Egypt. You will note that it is north of the equator at the parallel marked 30°. It is east of the prime meridian, a little beyond the meridian marked 30°. You say, then, that the location of Cairo, Egypt, is approximately 30°N.—31°E.

Every other place on the earth may be located in much the same way as Cairo. Madrid, Spain, (p. 394) is about 40°N.—4°W. From these figures you know that Madrid is nearly halfway between the equator and the North Pole, and a short distance west of the prime meridian. Wellington, New Zealand, (p. 391) is about 41°S.—175°E. From this information you can be sure that Wellington is about halfway between the equator and the South Pole, and that it is about halfway round the world from Britain.

By referring to a globe you will note that no place can have a latitude of more than 90°, for 90°N. is the latitude of the North Pole, and 90°S. is the latitude of the South Pole. No place can have a longitude of more than 180°. The meridian with 180° longitude is on the opposite side of the earth from the prime meridian.

In some books you may find figures such as the following, New York 40° 40′ N.—73° 50′ W. The figures 40′ and 50′ refer to minutes, which are parts of a degree, just as degrees are parts of a circle. Every degree is made up of 60 parts, called *minutes.* In describing latitude and longitude in this book we will use the nearest full numbers of degrees. For our study it is not necessary to include the minutes, or parts of a degree.

Compare the map with the globe. Our purpose in reading maps is to get a correct view of the world. To succeed in this we must have in mind how each land we study actually looks on the globe. We all know why this is so. This ball-map, the globe, is the only map which has the true shape of the earth.

Comparing maps with globes will help us see the true relationship between one part of the earth and another. For example, the Mercator map on page 15 (Fig. 23) suggests that the United States and Russia are far apart. A globe will show, however, that almost all of Russia is as close to the United States as is the southern part of South America.

Air travel has made it more necessary than ever to use a globe, for airplanes need not follow land or ocean highways. Only on a globe can one tell, at a glance, which would be the most direct air routes connecting different parts of the world. A globe, for example, shows that the shortest possible air route between Chicago and Moscow crosses part of Greenland and goes north of Iceland. A flat map might suggest that the route goes across Britain.

Pictures

How to read pictures. Pictures as well as maps are tools which bring the world to us. But pictures, like maps, tell their interesting stories only to those who have learned to read their language.

In studying any picture geographically, we need to ask questions such as the following: "What does the picture show about the land and about the people? How does the way people work fit the land in which they live?" The answers to such questions will help us get behind the scenes, as suggested in "An 'Understanding Look' " (p. 9).

"Reading" a picture. Looking carefully at the land in the picture on page 20, you will discover a rather narrow valley with a little stream in the bottom of it. Beyond the valley

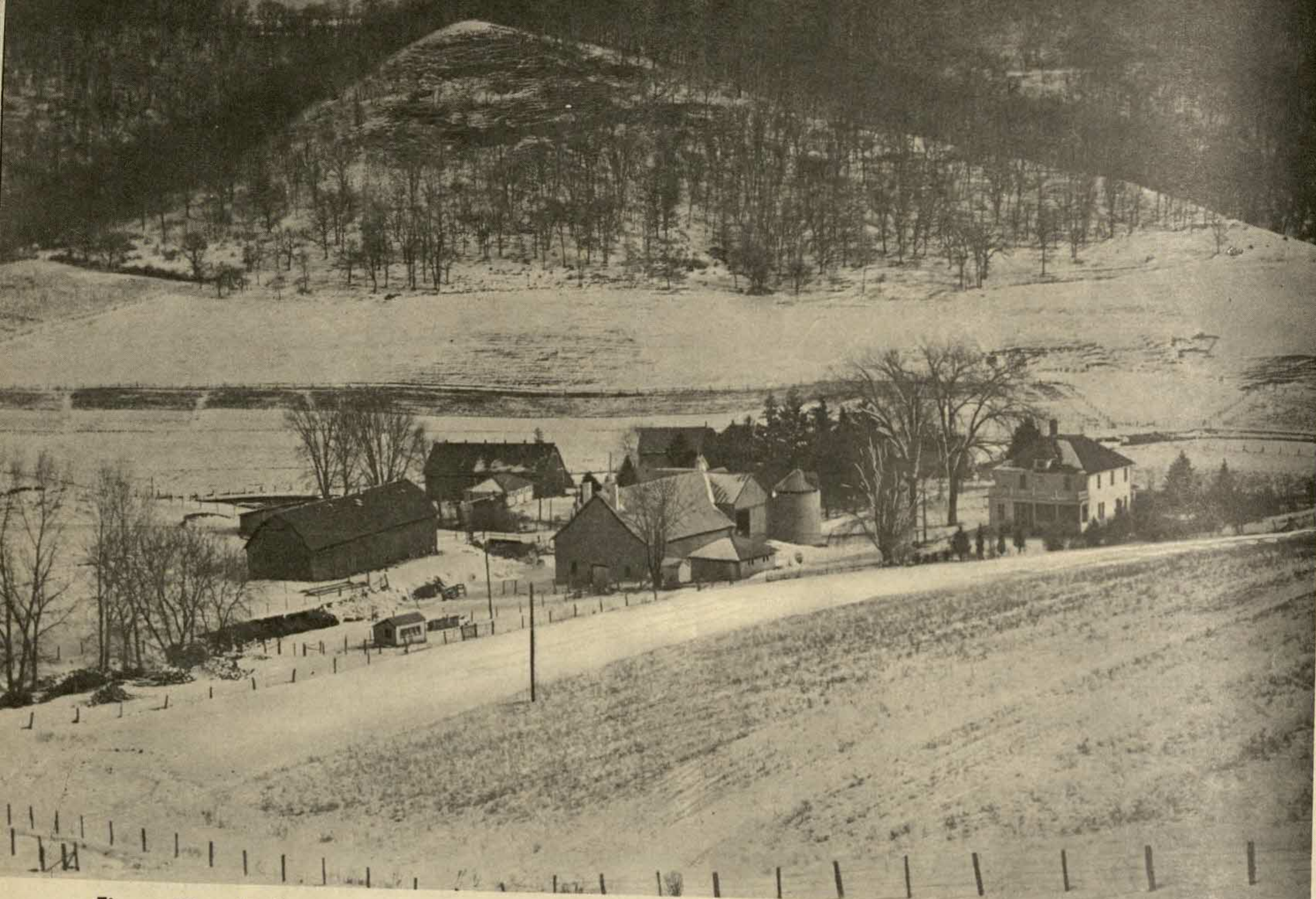


Figure 29. A picture to read

John Vachon

are steep, rocky slopes covered with trees. It is wintertime. There is snow on the ground and the trees are bare of leaves. In the field in the foreground, you can see signs of a crop that has been harvested. You know, then, that this is a land of warm summers and cold winters, a place which is neither close to the equator, nor to the North Pole. Actually, this is a scene in Wisconsin.

The picture tells much about the people who live here, although no person can be seen in the picture. Clearly they are farmers, as indicated by the fields, fences, and various buildings. What kind of farming is it? The picture has some answers. The silo suggests perhaps dairy cattle, perhaps beef cattle. Those familiar with tobacco farming will recognize two tobacco barns. The small sheds suggest chickens and pigs.

Farming seems to be rather profitable in this area. You can see a well-built house and many valuable farm buildings. There is one garage, possibly two, for automobiles or trucks. The poles in the foreground carry electric light and power. In general, the picture suggests skillful farmers who have been successful in their work.

Reasons. You might well go on and look for reasons why things are as they are in this place. For example, the rocky slopes help to explain why no farming is done on the steep hillsides.

Skill in reading pictures is much like skill in direct observation of the world around us. In both cases one needs to look carefully at what is there, and to consider thoughtfully what it means. And in both cases experience leads to greater and greater skill.

Statistics

What statistics are. If you were to tell someone how many boys and girls there are in your class, you would be using *statistics,* that is, facts which are stated in numbers. It would be difficult to describe your class without using facts of this kind. It would be hard, also, to describe the world without using statistics. Statistics, then, are a valuable tool in the study of geography.

How to use them. A few statistics can tell us much about the county in which the picture in Figure 29 was taken. It is Vernon County, Wisconsin. The following figures are based on the United States Census, 1950.

Vernon County, Wisconsin

Kinds of Work	*Number of Workers*
AGRICULTURE	6209
TRADE	1132
MANUFACTURING	519
TRANSPORTATION	239
OTHER WORK	2400

It is clear from the figures above that Vernon County is a farming county. Many more people are engaged in farming than in any other kind of work. The picture showed us one place in the county, the statistics give us an understanding of the county as a whole.

As you read further, you will find many references to the statistical material on pages 396-400.

Graphs

How graphs help. The statistics about Vernon County may be presented in a vivid and interesting way by using diagrams. The diagram in Figure 30 tells the same general story as does the list of figures above.

As you know, a diagram of this kind is called a *graph*. Each of the other graphs used in this book is based on statistics about people or things that have been measured or counted.

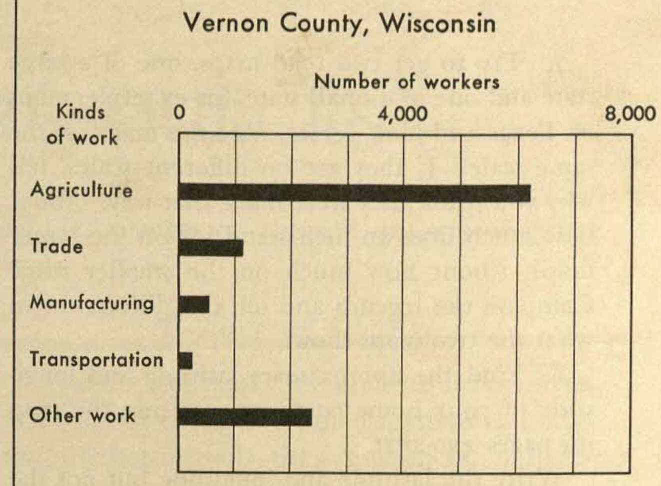


Figure 30. Facts about a county in Wisconsin

Different Tools, One Purpose

Taken together, these different geographic tools can do much to help us learn about our world. But they cannot do everything. We still need to practice the skill of direct observation, looking carefully at the real world which is around us.

The purpose of direct observation is the same as the purpose in using written text, maps, globes, pictures, statistics, and graphs. It is to get a world view—with understanding.

Helps in Learning

1. Make a list of the books, magazines, or newspapers in which you might find stories about how people live in the Amazon Valley.
2. Make a simple map of part or all of your schoolyard. Be sure to make a legend that shows what the signs on the map stand for.
3. It is said that "the explorer comes before the map." Tell what you think this means.
4. Explain why the work of mapping the world is never entirely finished.
5. Find a flat map of the world in this book or in some other book. Compare it with a globe. What differences do you notice? Tell advantages of each, the globe and the flat map.
6. Find your own community on maps that have different scales, like the three maps of Bedford on page 17. What can you learn about your community from each map? What does each map show that the others do not? Use these maps to explain why it is valuable to have maps on different scales.

7. Try to get two road maps, one of a large state and one of a small state, for example, maps of Texas and New Jersey. Are the maps on the same scale? If they are on different scales, tell why you think they were made that way. About how much does an inch stand for on the larger map? About how much on the smaller map? Compare the legends and tell the differences in what the two maps show.

8. Find the approximate latitude and longitude of your home community, using the map on pages 230-231.

Write the latitude and longitude but not the names of three big cities in the United States. See if your classmates can find these cities on the map.

9. Turn to the map of the United States on pages 230-231. Does this map tell you exactly how high above sea level your home community is? What does the map tell you about the elevation of your home community?

10. Would you use parallels or meridians for the following purposes? Finding the distance in degrees north and south of the equator. Finding north and south directions. Finding east and west directions. Finding distance in degrees east and west of the prime meridian.

11. Using a globe, tell what lands a pilot would fly over, if he were to take the shortest air route from San Francisco to London.

12. Find the picture of a farm in a book or magazine. Tell what you can read from the picture itself, without the help of the text.

13. The picture below shows people who lived thousands of years ago. Why could they not know as much about the world as you do?

Figure 31. A long time ago

MAN AND RESOURCES

A living from the earth. In the story of Bedford, you will recall, three natural resources — soil, forests, and minerals — were discussed. But these are by no means the only ones. A more complete list would include air, water, natural grasses, and what we may call animal life, that is, birds, wild animals, and fish. All of these nature provides for man's use.

Air and water are, of course, resources that are essential to life itself. Without air to breathe and water to drink, no man can live. There are other uses for these resources, too. Both the air and the water have become highways of travel. Think of airplanes and ships, air routes, lakes, rivers, oceans. Both wind and falling water may be used in making power. Air and water may even be raw materials in making goods of different kinds.

In getting a world view, we shall learn about five important kinds of natural resources and five different groups of workers who make a living directly from them. Hunters, trappers, and fishermen get their living from resources of animal life—birds, wild animals, and fish. Ranchers and herders depend on natural grasslands for their living. Farmers cultivate the soil. Forest workers look to forest resources. And the work of miners is based on mineral resources.

This does not mean that each group of workers depends on only one natural resource. As we shall see, everyone depends on many resources. Farmers need water resources as well as soil. Without soil and water ranchers could not make a living, for grass for their animals would not grow. Without soil and water there would be no trees for forest workers to cut. Yet each of the five groups of workers depends in a special way on one particular natural resource—for example, farmers on the soil, miners on minerals.

A Story of Change

The story of man's use of natural resources is a story of change. As men learned to make and use better tools, they came to use natural resources in different ways. Also, as they learned more about natural resources, they discovered new ways in which these resources could be used. Men learned, for example, that petroleum, when refined, could be used to produce power. They learned enough about the building of machines to make a gasoline engine. Then, one of the natural resources of the world could be used in a new way, and much of men's work could be done more easily and more quickly.

Not only do men's ways of using natural resources change, but the resources themselves change with the passing of time. Soils may wear out or be washed away. They may be improved by careful cultivation and fertilizing. Forests may be burned or new forests may grow. New minerals may be discovered or old mines may be abandoned.

There is change, too, in the way men think about natural resources. At one time men used these resources as they found them, without thought of conserving them. Now men realize that they are completely dependent upon natural resources and must use them wisely.

Ten thousand years ago. The world of 10,000 years ago was very different from the world today. The picture on page 22 shows people of that time doing some of the kinds of work which were common then. Men probably spent much of their time hunting wild animals and fishing in the streams and lakes. Women collected wild fruits and berries and various seeds, and dug up roots, all of which could be used for food. These people had not learned to grow crops and to raise livestock. They depended on wild animals and wild plants for food and clothing. These were the natural resources they knew how to use in making a living.

The people of that early time depended almost entirely on themselves. Nearly everything they had was homemade. For clothing they used the skins of animals, sewed together with a bone needle. When they needed a new home, they made it themselves, in a short time, with their own hands. A branch of a tree became a club, or it could be shaped into a spear. A stone, with a few chips knocked off, became a hammer or a handy weapon for killing animals. Because of their simple use of stone, the people of that early time are said to have lived in the *Stone Age*.

Steps forward. A later view of the world, perhaps 6000 years ago, would show great differences. Some people still were *food-gatherers,* as indeed some are today. But at various places men had become *food-producers.* Instead of simply taking the things which nature provided, they had begun to cooperate with nature in producing the things they wanted. Some men had learned to tame, or *domesticate,* animals and had become herders. Others had learned how to cultivate the soil and had become farmers. Each group had found a new way of using the earth's resources. Herders used the grasslands to pasture livestock. Farmers used the soil for growing crops.

Men learned how to make more and better tools. They still made tools of stone, but they shaped the stone more skillfully. They also invented new stone tools, for example, a stone sickle for cutting grain. But life still was hard.

The Age of Civilization. Changes continued as century followed century. Men discovered new mineral resources, and, in time, metals came into common use. Men learned to write. They invented the wheel, the sailing ship, and the plow. Men came to live together in groups under organized governments. Beautiful cities were built along the Nile and along the Tigris and Euphrates rivers (pp. 386-387). The *Age of Civilization* had begun. And countless other changes were to come.

In describing the achievements of the past, it is interesting to know in general when they occurred. Was it near the beginning of civilization or in recent times? Many historians consider that there are three major periods in the story of civilization: ancient times, medieval times, and modern times.

Ancient times are said to have begun when civilization began, at the end of the Stone Age. Ancient times came to an end when the Roman Empire was broken up, about 476 A.D. Then came the medieval period, lasting until about the time of Columbus. We live in modern times, which some historians think of as beginning in about 1500 or 1600 A.D.

Even in the first part of modern times, there were few great changes. But, year by year, men improved the tools they made and their ways of using them. And men's knowledge increased bit by bit, especially in late medieval and modern times. The invention of the printing press with movable type, which came before Columbus discovered America, has been of the greatest value in helping men to spread knowledge to all parts of the world.

The Industrial Revolution. In man's use of natural resources, by far the most striking change came about as a part of the Industrial Revolution. This revolution, or change in ways of working, came in modern times, nearly 300 years after Columbus, or about the time the United States became an independent nation (1776). At that time, in England particularly, men began to use new kinds of machines which made it possible to produce many things by machinery instead of by hand. Steam power began to do some of the work previously done by men and animals. Factories sprang up one after another. This meant that there was a greatly increased demand for resources of coal and iron ore. And, as we shall see, new ways of using other resources were discovered. As a result, there were great changes in men's ways of living.

The changes which were brought about by the Industrial Revolution were greater, in some ways, than all the changes of the previous 10,000 years. One historian tells us that "only two hundred years ago men were still tilling the soil, building, traveling, and sending messages in much the same way that the first civilized people had done. They had more and better tools, but these were essentially the same kind of tools that had been invented long before."

The new ways of working brought about by the Industrial Revolution spread from England to the mainland of Europe, to the Americas, and in time to many other parts of the world. The story and pictures of the Bedford community show well what the changed world is like. The picture at the top of page 3 suggests travel by automobile, truck, and train. The wires in the picture tell of electric light and power, and of messages passing along telephone lines. In the picture at the bottom of page 5, a farmer is using a tractor. Electric motors turn the machinery at the quarry (p. 6), and in the factory (p. 7). Milk moves to market by motor truck or railroad car (p. 8). On the main street (p. 7) there are automobiles, electric light and telephone wires, a Western Union Telegraph office, and electrically lighted signs.

All these machines and other inventions have come during little more than 150 years. George Washington, who lived at the beginning of the Industrial Revolution, knew none of these things. During the past 50 years changes have come faster than ever. The radio, television, radar—to name a few—are recent developments. The present development of atomic power is only one illustration of the fact that the Industrial Revolution is still going on.

Why Changes Have Come

Knowledge, tools, and power. In the long and complicated story of man's progress, it is not easy to find exactly why certain ways of working changed. But, in the story as a whole, three important developments help most to explain changes in the use of natural resources—increased knowledge, better tools, and new kinds of power.

As one generation followed another, men little by little accumulated a storehouse of knowledge. People observed things, learned things, and passed them on, so that each generation did not need to start from the beginning and learn everything over again.

Look at the tools, small and large, that people use in your home community—hammers, shovels, railroads, factories, microscopes, and perhaps tools for making tools. The list is almost endless. Consider how hard it would be to make a living without them. Improved tools, then, have much to do with man's better use of the gifts of nature and with better ways of living.

For thousands of years after man appeared on the earth, he did all his work himself. As he moved toward civilization he learned to use animal power, in plowing, for example. Later he began to use the wind to drive a boat. In time the power of falling water was harnessed. Much later man learned to use power made by burning coal and petroleum. Steam engines, gasoline engines, and electric motors came into common use. Very recently men have learned to release the power of the atom in certain minerals.

The pictures on page 26 illustrate differences in power through the centuries. Figure 32 shows a simple stone hammer used in the Stone Age. The machine in Figure 33 is a modern power-driven hammer. It is used to shape pieces of steel. It strikes with the power of hundreds of men. Without modern power there could be no modern industry.

The iron ore used in making the power-driven hammer lay unused in the Stone Age. Such ore could be used as a resource only after men had learned simple things about working with metals. Tools for making machines had to come before the power-driven hammer. In turn, this hammer makes certain other machines possible, machines which may be used in mining or smelting iron ore. Natural resources, knowledge, tools, power, ways of living, all go together.

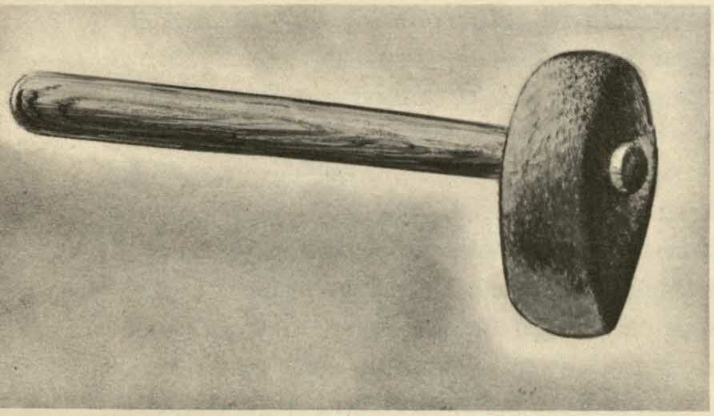
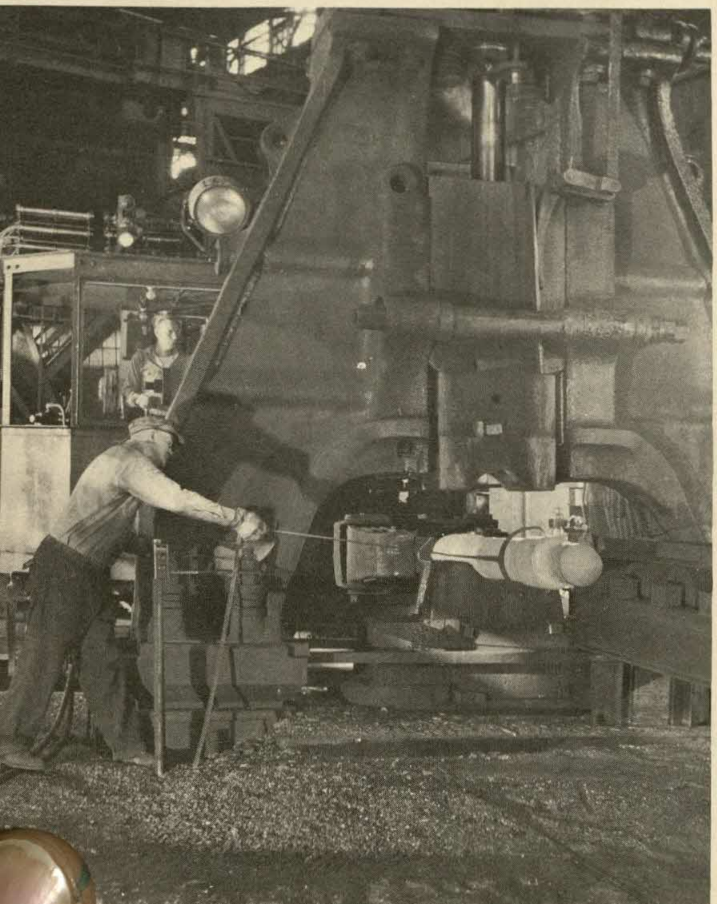


Figure 32. A tool of the Stone Age

Figure 33. A modern tool *Courtesy U. S. Steel Corp.*



This Will Not Change

In spite of great changes in the use of natural resources, man is still completely dependent on them. All people everywhere depend on natural resources for a living, directly or indirectly. That is why everyone should be concerned about the wise use of these resources. As long as man lives on the earth, he must make his living from the earth.

Helps in Learning

1. Life in Bedford differs in many ways from life in the Stone Age, as shown by the picture on page 22. Tell what differences you would expect in what people knew about their world then and now. In their tools. In their use of power. Refer to the pictures in the first chapter to help you in describing some of these differences.

2. Which of the following kinds of power are used in your community: animal power, electric power, water power, wind power, steam power, power from gasoline, power of men's muscles? Tell several ways in which they are used.

3. What difference would it make if your community did not have electric power, steam power, or gasoline power? The answer will make clear some of the advantages brought about by the Industrial Revolution.

4. Suppose your family moved into a new house and had to make, themselves, everything to furnish it. What kinds of things would they probably have to do without?

Five Great Natural Resources and How Men Use Them

Some great resources are provided by nature in every part of the world. These resources are necessary to man's existence, but most of them are of little value until something is done with them. Without the farmer the most fertile soil could not produce the food we need. Without the miner, coal would not be used for heat or power. Wild animals and schools of fish, pine and ash and stately oak, grass knee deep across the plain—all these resources and many more are valuable to man. But without the hunter or the fisherman, the lumberman, and the herder, they would be of little use.

The story of resources, then, is a story of work. Men work with resources, and by means of their work make the resources valuable. Through this work men make a living for themselves, and they make it possible for others to live. Perhaps you have never fully realized how much you yourself depend upon these natural resources and upon the men who convert them to products you can eat, or live in, or wear.

As you study these chapters, you will see how the great natural resources are distributed over the world. You will discover differences in the ways in which men work with natural resources in different places. You will see clearly that what men have learned about using resources may be as important as the amount or kinds of resources which are available to them. You will see, too, how natural resources and the people who work with them are essential to all other workers. You will begin to see that natural resources are part of the foundation on which civilization is built.

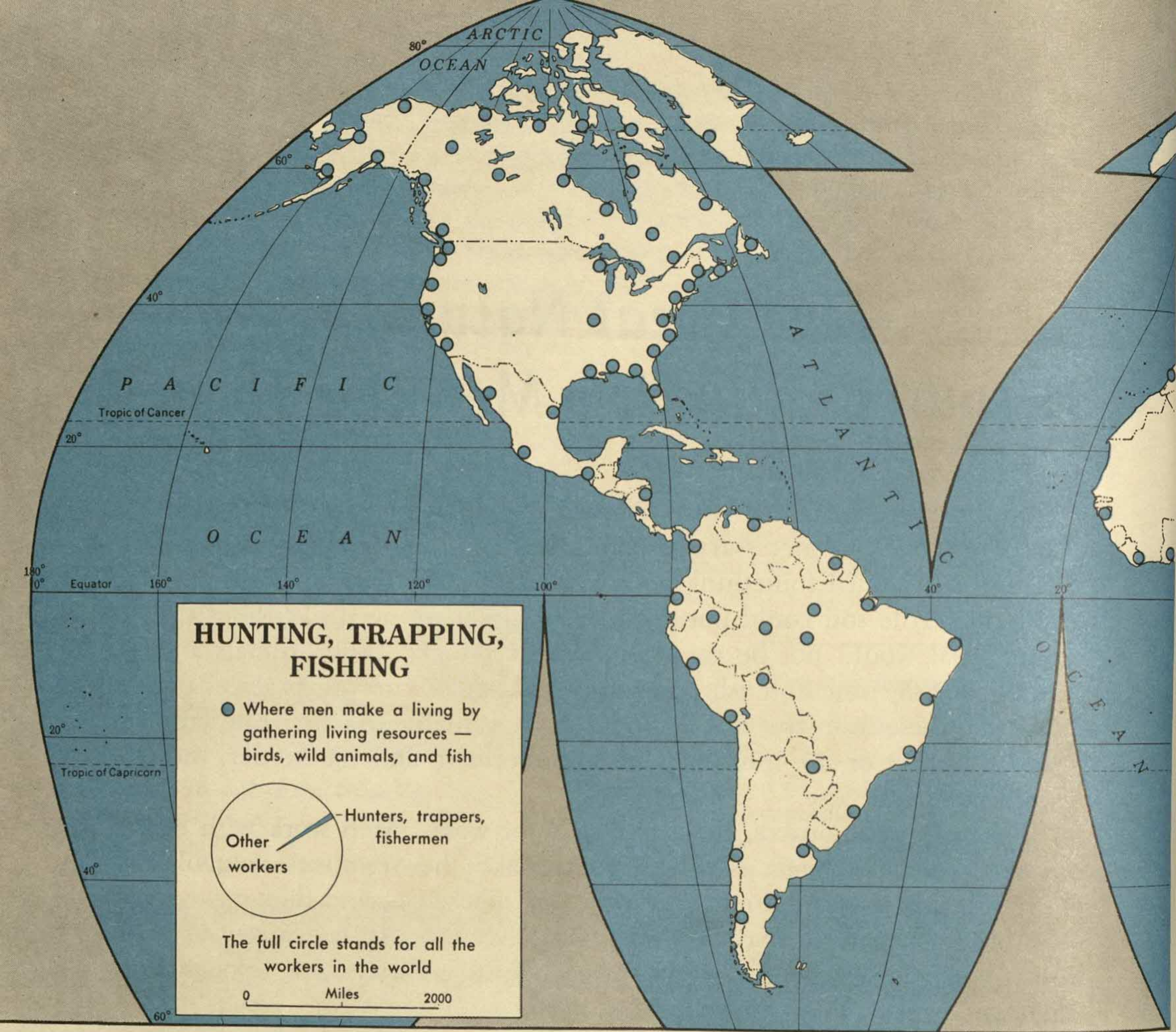
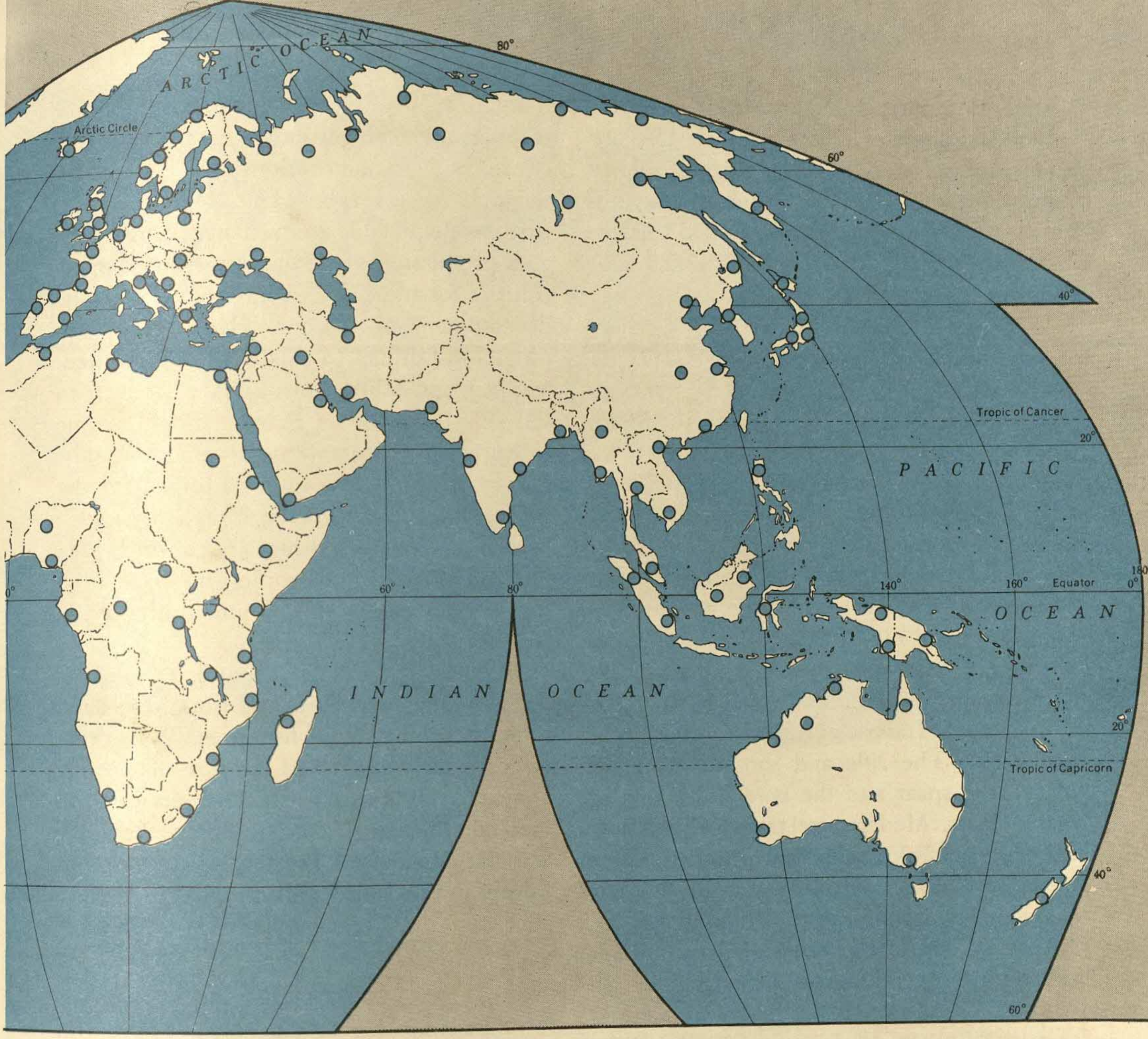

ARCTIC OCEAN
80°
60°
40°
20°
P A C I F I C
O C E A N
Tropic of Cancer
Equator
180°
0°
160°
140°
120°
100°
40°
20°
A T L A N T I C
O C E A N
20°
Tropic of Capricorn
40°
60°
HUNTING, TRAPPING, FISHING
● Where men make a living by gathering living resources — birds, wild animals, and fish
Hunters, trappers, fishermen
Other workers
The full circle stands for all the workers in the world
0
Miles
2000

Figure 34

HUNTERS–TRAPPERS–FISHERMEN

The search. Every day, somewhere in the world, people are looking for certain birds, wild animals, and fish. Some men carry guns. Others have spears, traps, nets, or hooks and lines. They may travel on dog-sleds, fly in airplanes, sail on ships, or walk. The search goes on in good weather and bad, in the cold of the Arctic regions and in the heat of the tropics. Many thrilling adventure stories have been written about this search. But it is not adventure to most of the people directly concerned. It is simply part of the day's work. These people carry on this search in order to make a living.



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The workers. The map above shows where many of the world's hunters, trappers, and fishermen live. No particular number of people is represented by each dot. The important fact is that the dots show, in general, *where* these people are. All together, they form only a very small part of the world's population, as is shown by the graph which appears in the legend of the map.

At a glance you can see that hunters, trappers, and fishermen are widely scattered in the world—in the American continents, Eurasia, Africa, Australia. Within the entire group of workers, therefore, you may expect to find various types of people, living in many different kinds of places. Some are prosperous people with fine equipment and good homes. Others are less fortunate. Yet they all have something in common. They all make a living by gathering the same general kind of natural resources. These are what we may call resources of animal life—birds, wild animals, and fish—which nature has provided for man to use.

The map does not show whether one or another of these activities—hunting, trapping, fishing—is important in a particular area. You will notice, however, that most of the dots are near seacoasts or lakes. This suggests places where people can fish and indicates that fishing is important. In fact, the world's fishermen outnumber the world's hunters and trappers together.

Changes since the Stone Age. At one time, as you will recall, most of the world's people made a large part of their living by hunting, trapping, and fishing. This was in the Stone Age (pp. 23-24).

As the years went by, some people continued to live in this way. In time, however, more and more of the world's people worked on farms, herded flocks, or crowded into cities. But here and there some people kept on hunting, fishing, and trapping for a living.

Little by little some men learned new ways of hunting, trapping, and fishing. In modern times, the Industrial Revolution has made itself felt. The rifle and shotgun have replaced the spear and the bow and arrow in many places. Modern steel traps are used now instead of simple snares and pitfalls. Power boats have taken the place of many dugout canoes. Today, these and other changes are still going on, for modern tools have not yet come into general use in every part of the world. A few hunters, trappers and fishermen still live much as such men did thousands of years ago.

Because the hunters, trappers, and fishermen of the Stone Age hunted, trapped, and fished just to live, or *subsist*, they are referred to as *subsistence workers*. These people were almost entirely self-sufficient. They gathered most of what they needed, and they used up most of what they gathered. As there was seldom a surplus, there was little, if any, exchange of goods.

In time, however, men began to gather more than enough for their own families. Better tools helped them to do this. A half-dozen fishermen, who have good nets and fine boats, may catch enough fish in a few hours to supply an entire town. Hunters and trappers, too, can get more game with better equipment. So one result of men's use of better tools was a surplus of products. This, in turn, made possible an exchange of products.

A production of surplus gave men opportunities for trade or exchange and led to the development of commercial hunting, trapping, and fishing. In this work men hunted, trapped, and fished more to have products to sell than to get food to eat. They became concerned with *commerce,* that is, with buying or selling, or trading. In return for the things they sold, they were able to buy a wide variety of foods and other things which they needed. Today most people who make a living by hunting, trapping, and fishing do it commercially.

The descriptions and pictures that follow tell something of the life and work of selected hunters, trappers, and fishermen. They represent widely separated groups of people. Some are subsistence workers, others are commercial workers. Taken together, they give an over-all view of hunting, trapping, and fishing in our world today.

Helps in Learning

1. By comparing the map on pages 28-29 with various maps in the atlas, you can discover some things about the places where the world's hunters, trappers, and fishermen live, even before you read about them.

(*a*) Turn to the rainfall map, pages 372-373. Do hunters, trappers and fishermen live only in rainy lands, or in both rainy lands and dry lands?

(*b*) Look at the population map, pages 370-371. Do they live only in thinly settled lands?

(*c*) In general, cold lands are far from the equator, warm lands are close to the equator. Would you say that, in general, hunters, trappers, and fishermen live in places having one kind of weather or different kinds of weather?

2. Remember that making a living from hunting, trapping, or fishing is very different from going hunting or fishing while on vacation.

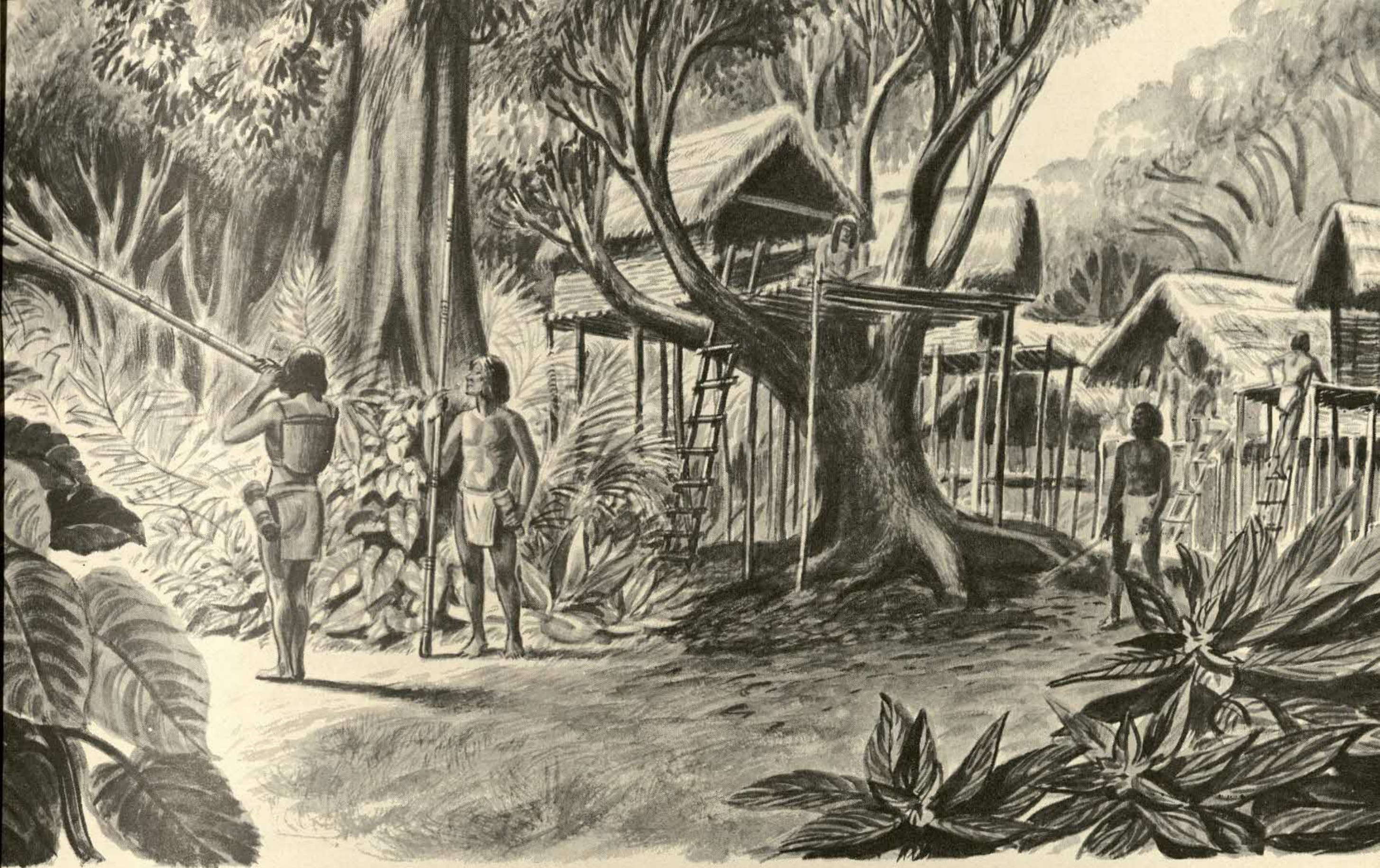


Figure 35. A village in Malaya

Do you know anyone who makes a living as a hunter, trapper, or fisherman? What natural resources does he depend on for a living? What tools does he use? Is he a subsistence or a commercial worker?

From the Tropics to the Arctic

Hunters in Malaya. The picture above shows a settlement deep in the forests of Malaya, a peninsula in southeastern Asia (pp. 386-387). Because of the trees, you cannot see all of this settlement. There may be 20 or 30 more houses only a short distance away. Most of the houses are raised above the ground to avoid dampness and to give protection from wild animals.

The people who live in this village belong to a group of small, dark-skinned people called the Sakai. They are known as a hunting people. They depend largely on the wild life of the forest for food. When game is scarce, the entire village may move to a new location, in the hope that the men can find more game there.

Birds, squirrels, monkeys, wild pigs, and deer, all of these may be used for food. Much of the game is killed with blowguns, like those which the men in the picture are carrying. A blowgun is a long, slender bamboo tube. A hunter inserts a small dart in the tube, then "fires the gun" by blowing suddenly through the tube. In most cases the dart is poisoned, so that it is the poison rather than the dart itself which kills the animal.

The Sakai do some trapping and fishing along with their hunting. One very simple trap is a piece of bamboo smeared with something sticky enough to catch and hold a small bird. When fishing, the Sakai may use hooks and lines, or nets of various kinds. They may even poison the water in order to kill the fish.

The Sakai do not depend entirely on birds, animals, and fish for a living. The women may gather fruits or berries. Some of them grow bananas, sweet potatoes, and rice in small gardens in forest clearings. There are very few people in the world who live from hunting, trapping, and fishing, and nothing else.

On the whole the Sakai are subsistence workers, living much to themselves in the forest. Yet they do have some contacts with the outside world. They trade various forest products for such items as cloth, salt, fishhooks, and axes. There are places where the Sakai could buy modern guns. But most of the Sakai could not afford to buy guns or the ammunition for them.

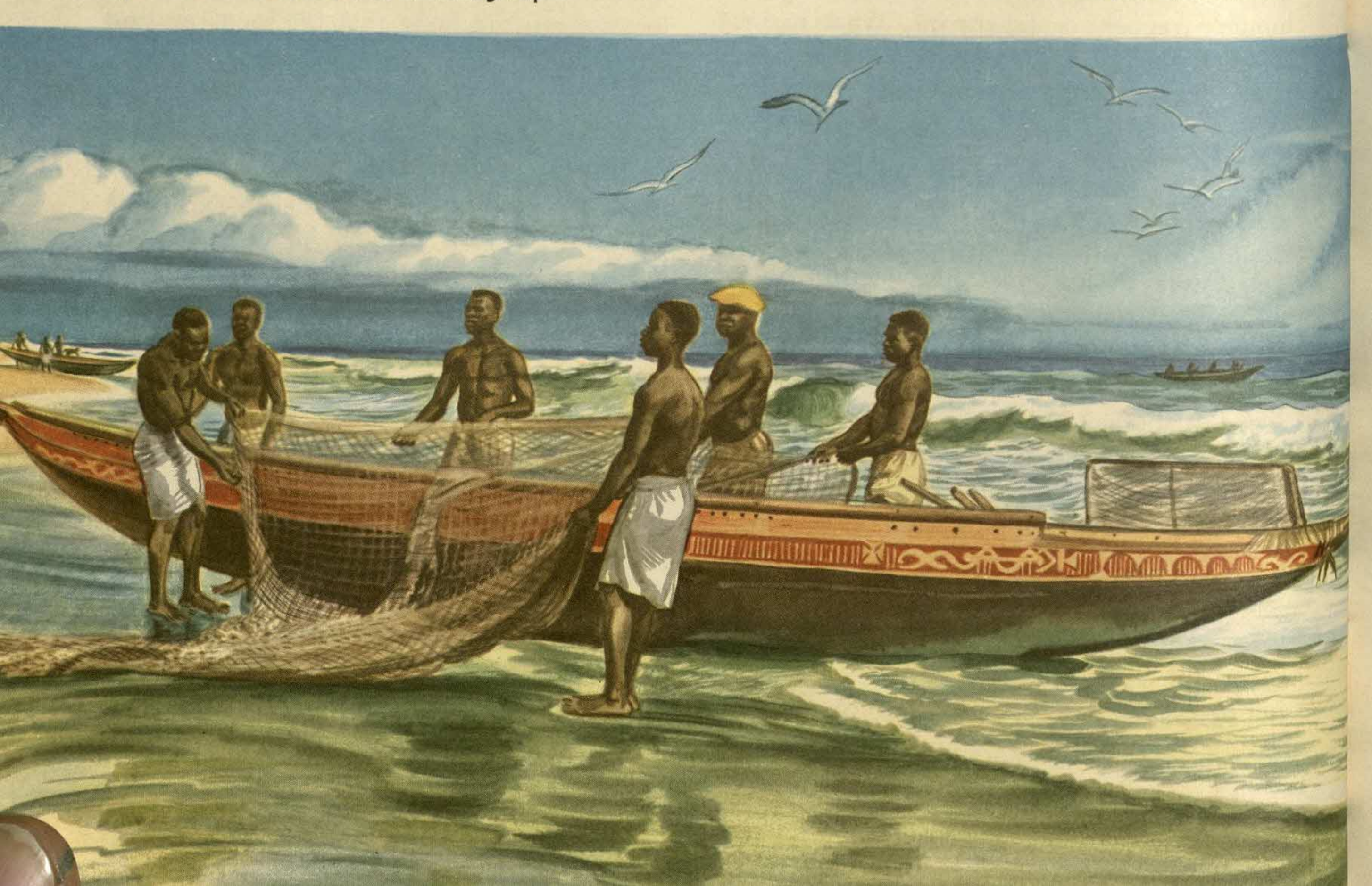
Fishermen in Africa. About 3000 miles west of Malaya and the Sakai, there is another settlement, in which men make direct use of resources of animal life. This is a Negro village in the Gold Coast, a British colony in western Africa (p. 390). In skipping from southeastern Asia to western Africa, we have, of course, passed by hundreds of places which might equally well have been chosen to illustrate the work of hunting, trapping, and fishing.

This Gold Coast settlement is a fishing village. In the picture below, men from the village are loading a long net into their canoe. In a few minutes they will push the canoe off the beach and paddle out into the ocean. There the net is let down. A little later the fishermen begin to pull it toward the shore. But the net is long and heavy, and the waves are strong. At least 40 more men join in the work, in boats and on land, before the net finally is pulled up on the beach. There is much excitement then, as many hundreds of shiny fish are gathered in baskets, before they can flop back into the water.

This work is not entirely commercial, although it is more so than the work of the Sakai. The Gold Coast fishermen take a share of the fish for their own use. They

Figure 36. At the start of a fishing trip

From photo by Monkmeyer



also sell fish to local shopkeepers and to other people who come to the beach to buy. Even so, their contacts with the outside world are few. They carve their own dugout canoes from huge logs. And they make their own nets and many of the other things they need.

Eskimo hunters. The man in the picture (Fig. 37) is an Eskimo hunter who lives on the Arctic coast of North America. It is early spring, a good time to hunt seals on the ice. He has already killed one seal, and is waiting for another to appear in the water, which he can see through a crack in the ice.

Hunting of this kind is serious work to the Eskimo people. Most of them live in scattered little settlements on the coast of the Arctic Ocean. There the winters are long, bitterly cold, and dark. Summers are bright with sunshine. For a brief time the snow disappears, the mosses and bushes turn green. Yet the summer is too short and cool for trees or crops to grow. Some Eskimos have learned to herd reindeer. But for most of them, hunting is almost the only way of making a living.

The Eskimos hunt the seal, and also the polar bear, the walrus, and the caribou, which is a wild reindeer. In summer the women catch birds with nets and gather birds' eggs. At times the men trap foxes, perhaps using steel traps. But none of these activities is so important as hunting seals, for none of these birds or other animals can supply as many valuable products to the Eskimo. The meat of the seal is the most important food of the people. Nearly all their shoes are made of sealskin. The intestines of the seal are used for waterproof clothing and for windows. And the simple stone or snow houses of the Eskimo are heated and lighted by burning seal fat.

Aside from a few traders, missionaries, and government officials, there are almost no white people among the Eskimos. Nevertheless, the white man is responsible for some great changes in the way the Eskimo lives and

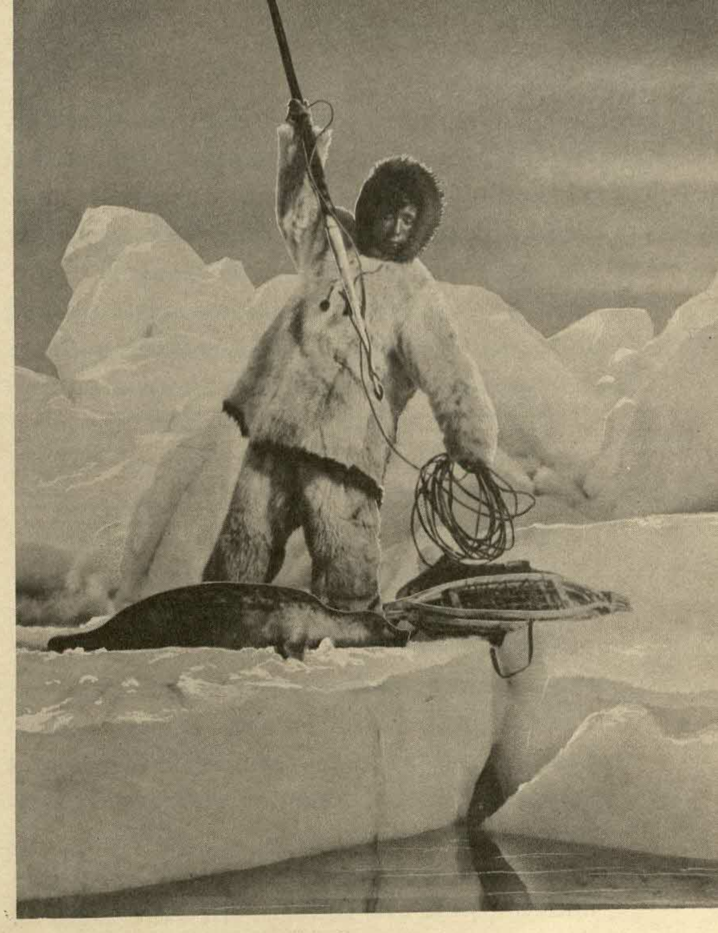
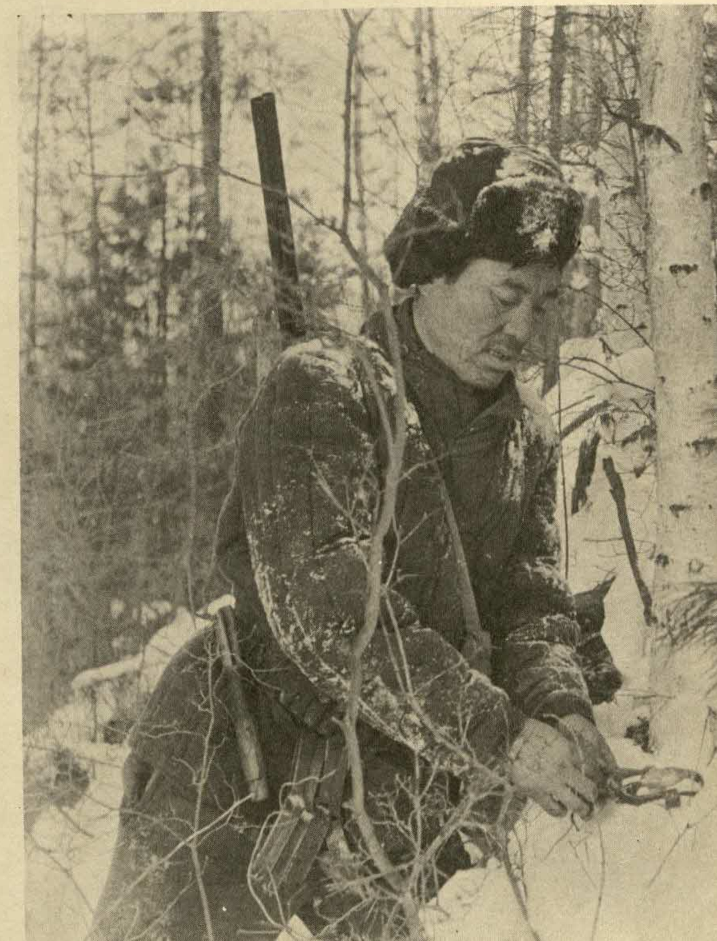


Figure 37. A successful hunter © *Ewing Galloway*

Figure 38. A trapper in the Russian forest © *Sovfoto*



works. In return for fox skins, for example, the trader may give the Eskimo cloth, needles, medicines, tea, sugar, guns or ammunition. Some Eskimos have gasoline stoves and other conveniences obtained from traders.

In some places, the Eskimos are beginning now to pay more attention to trapping foxes for sale than to hunting seals for food and clothing. Instead of being subsistence workers, these Eskimos are coming to be commercial workers.

Hunters and trappers in northern forests. A wide belt of forest land stretches across North America and across Asia, just south of the barren Arctic lands. These forests are the home of countless wild animals—beaver, muskrat, mink, lynx, fox, marten, and others. Living in the forests are many hunters and trappers, who depend on these animal resources for a living.

In the Canadian forest, most of the hunters and trappers are Indians. In Asia, most of them are Russians. The picture in Figure 38 shows one of these Russians setting his traps in the snow. He may tie some bait to the tree branches directly above the traps. The pelt of the animal caught in one of those traps may find its way, in time, to a store in Moscow or New York.

Commercial Fishing

Changes in ways of fishing. For thousands of years, some men have made a living by catching and selling fish. Even in ancient times a few men were engaged in commercial fishing. But in recent times great changes have taken place in this kind of work. Until about 100 years ago most fishing boats were small sailing vessels or rowboats. Then came the steamship, a product of the Industrial Revolution (p. 24). At first some steamships collected the fish from sailing boats which were far out at sea. In this way the fish were taken to market much faster than a sailing boat could carry them. Then, steam-driven fishing boats were developed that made it possible to drag the big nets back and forth in the ocean, not only on calm days but even during storms. Today many fish are caught from sailboats and rowboats, but year by year more big power-driven boats are being used. And many fishermen who once had their own little boats now work for wages on the larger vessels.

Four great fishing grounds. On the map on pages 28 and 29, there are four groups of dots which indicate the greatest four commercial fishing areas in the world. These areas are: (1) the Pacific coast of the United States, Canada, and Alaska, (2) the Atlantic coast of Canada and the United States, (3) the northwestern coast of Europe, and (4) the coasts of Japan. Most of the fish and fish products which enter world trade come from these four areas.

At once the question arises, "Why is most of the world's commercial fishing done in these areas?" To begin with, valuable fish are more plentiful in these areas than almost anywhere else in the vast oceans. Fish must have food, and there is an abundance of food for them in the North Pacific and in the North Atlantic, in part because warm and cool ocean currents meet there. Also, many of the best fish prefer the temperature of the water found in these areas.

In some countries which face these four great fishing areas, the land is poor. It is natural that men in these lands have turned to the sea for a living, especially since the waters are rich in fish. The long irregular coast lines provide excellent harbors for fishing vessels. And not of least importance is the fact that three of these fishing grounds are next-door to some of the most thickly settled lands in the world (pp. 370-371). As you know, commercial fishing depends on a market for fish and fish products.

Along the Pacific coast of North America. In Figure 39, fishermen are at work in the Pacific Ocean, near the boundary between the United States and Canada. They have been fishing for salmon, and are now hoisting a small net full of salmon into their ship. These and many other salmon were caught in the large net, most of which is now piled in the end of the vessel.

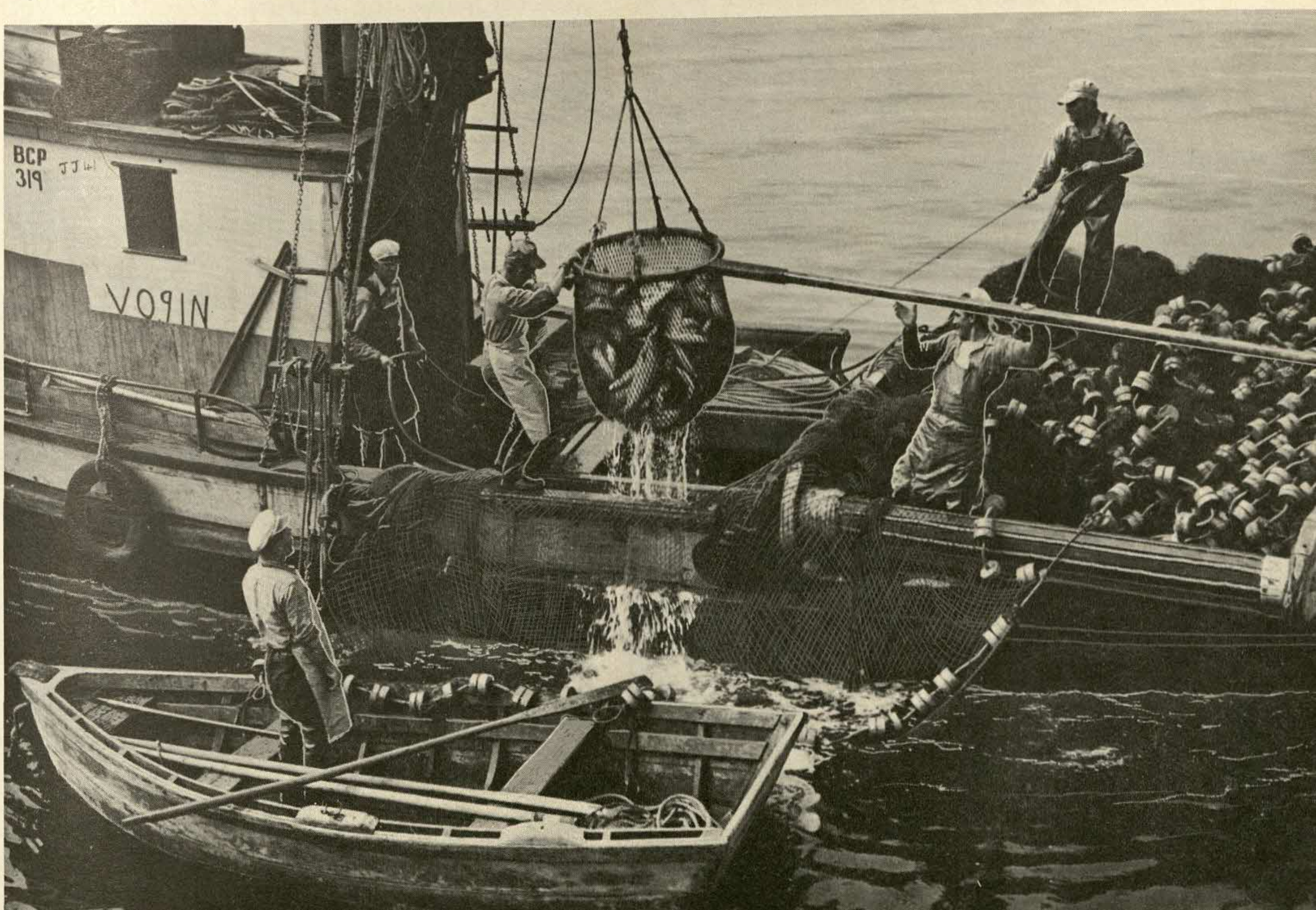
When the salmon first were sighted in the ocean, men in small boats strung out the large net in a great circle in the water, enclosing hundreds of big fish. Little by little the net was pulled to the ship. There was much splashing and jumping as the fish were crowded closer and closer together. Finally the fish were scooped out of the water by the net on the end of the long pole.

The fascinating life story of the salmon helps to explain why most salmon are caught along the coast, usually near the mouths of rivers. Salmon go from the ocean, where they live most of their lives, up fresh-water streams to lay their eggs. The baby salmon are hatched in these streams, in some cases hundreds of miles from the ocean. While still small, they swim to sea and grow up in salt water. When they are grown, they try to return to the fresh-water streams where they were hatched. There they will lay eggs, and more salmon will be hatched. This is the time the fishermen go to work. They catch large numbers of full-grown salmon as they approach the coast and the mouths of rivers. Fishermen have learned that the fish should be caught *before* they enter the rivers, for the meat is not so good after the salmon have been in fresh water for a while.

The salmon is one of the valuable fish found along the Pacific coast. Millions of them are caught each year, most of them between Oregon and Alaska. But salmon is by no means the only fish caught in large numbers in these waters. California is well known for its tuna fish and sardines, in particular. All together, dozens of different kinds of fish are caught along the Pacific coast of North America.

Figure 39. Fishing for salmon

© *Ewing Galloway*



Along the Atlantic coast of North America. Commercial fishermen also are at work along the coasts from Texas to Labrador. As you might expect, their work and their catches vary greatly from place to place. Some fishermen are seldom out of sight of land. They bring in their catches every day. Others may go hundreds of miles out to sea and stay away for days or weeks at a time. Some men work by themselves, perhaps one or two fishermen in a boat. Others are members of large crews on large ships, called *trawlers*.

The fisheries of southeastern United States are well known for shrimp, mullet, oysters, and other products of the sea. Farther north, cod, halibut, herring, haddock, rosefish, and mackerel are caught in large numbers.

As the map on pages 28 and 29 suggests, New England and eastern Canada are centers of commercial fishing. Boston and Gloucester, Massachusetts, and Portland, Maine, are famous "home bases" for American fishing fleets. Almost every day in the year, thousands of men from these and other near-by ports are out at sea. Most commercial fishermen have homes on shore and share in the life of the communities in which they live.

A large share of the fish in this area are caught on the "banks," that is, shallow places in the sea. Some of the banks have names. The Grand Bank, for example, is near Newfoundland. Georges Bank is off the coast of Massachusetts.

The pictures below show fishermen who have sailed from Gloucester to one of the banks. In the first picture a man is tossing a net into the sea. After being dragged for miles through the water, the net is reeled in. Then the men watch eagerly, for the pay of the crew may depend on the number of fish caught. Sometimes many hundreds of pounds of fish are caught on a single trip.

The hardest work for the crew begins after the fish are in the boat. As shown in the second picture, the men must clean the fish. Then they sort them and pack them in ice. This work of catching fish and preparing them for market may go on, until the boat is full and again heads for Gloucester.

Along the northwestern coast of Europe. The picture on page 37 shows a port almost directly across the Atlantic from New Eng-

Figure 40. Before the catch

Courtesy Standard Oil Company (N. J.)

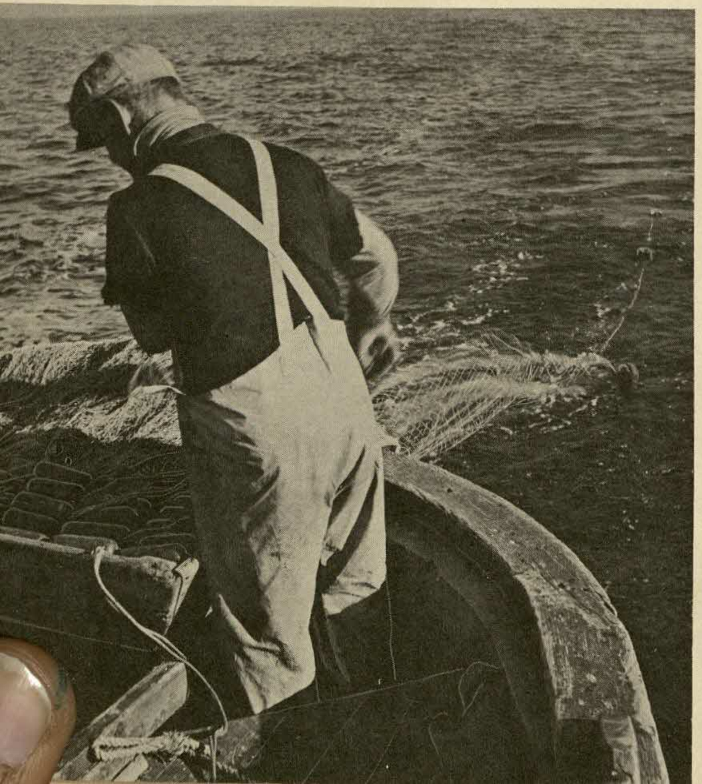
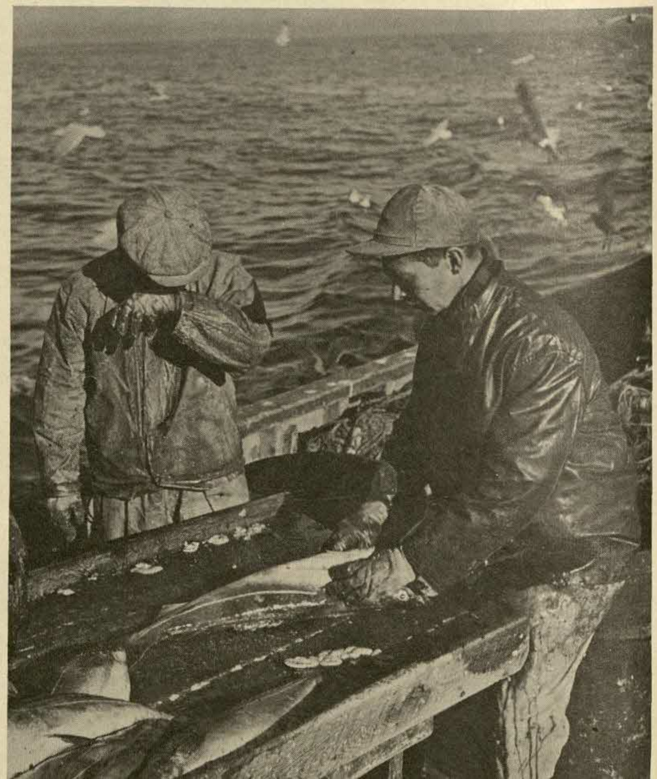


Figure 41. After the catch

Courtesy Standard Oil Company (N. J.)



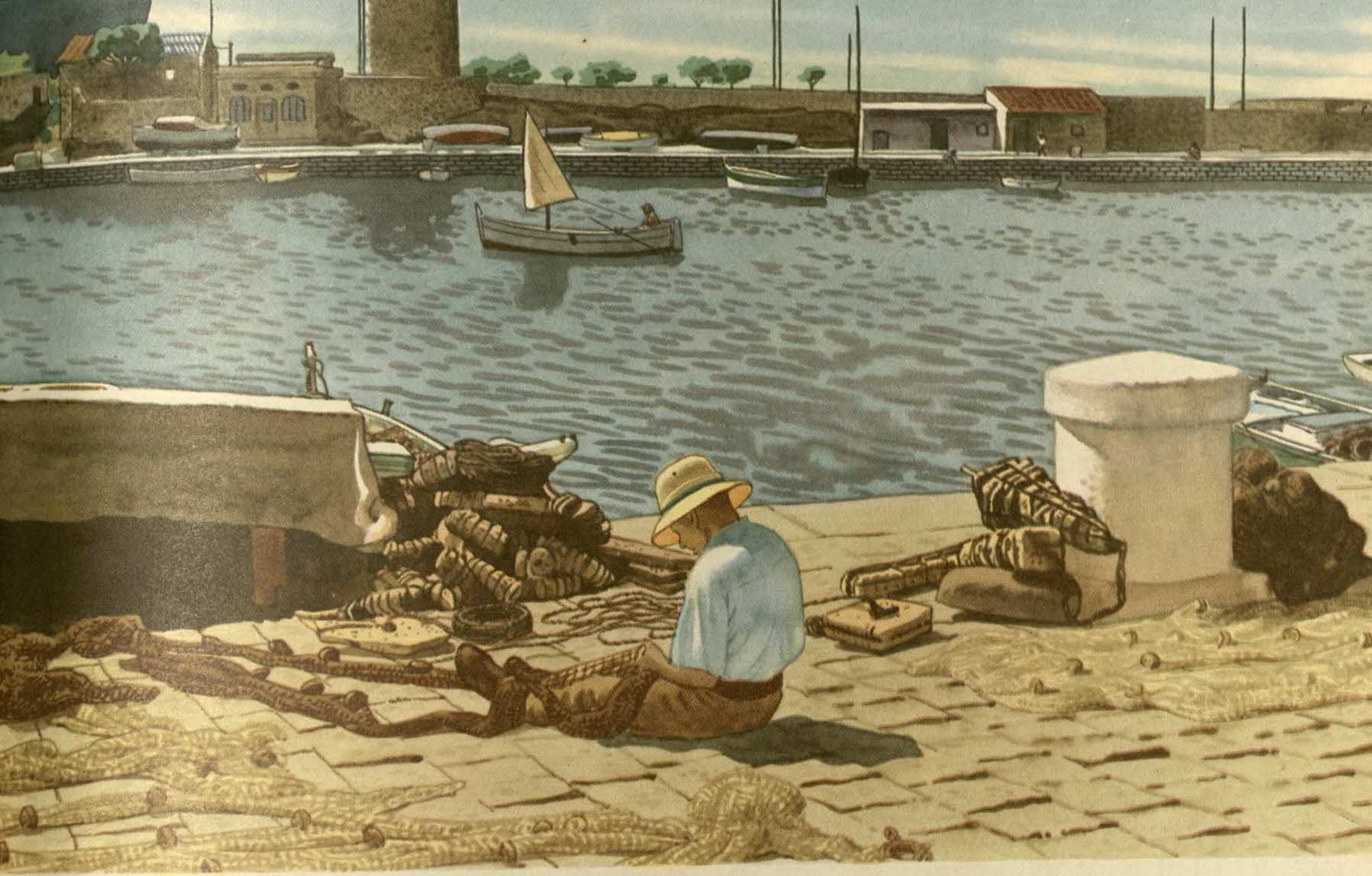


Figure 42. Mending the nets

From photo by Hackett

land. Here, along the northwestern coast of Europe, there are rich fishing grounds, from which many thousands of people make a living. Most of these fishermen live along the coast between Norway and France (p. 394). Much of the fishing is done on the famous banks of the North Sea, east of Britain. The chief fish caught in these waters are cod, halibut, haddock, and herring.

Like ocean fishermen everywhere, the fishermen of northwestern Europe have a hard life. They must face many discomforts and dangers. They fish in bitterly cold weather, as well as in warm weather. Many fishermen have lost their lives in storms at sea. Always during heavy fogs, there is danger that a small fishing vessel may be run down by one of the huge ocean liners that sail back and forth across the Atlantic.

The picture above shows a fisherman at work on a particularly pleasant day. He has spread some of his nets out on the stone pavement to dry. He is mending one of the others. When the work is done, all the nets must be carefully rolled up, ready for another fishing trip.

More fish are landed in Britain and in Norway than in any other two countries in Europe. Most of these fish are brought in by trawlers. A large British trawler may be 150 feet long, and carry 250 tons of coal as fuel. When it leaves port, it may carry as much as 50 tons of ice. When the trawler returns, perhaps three weeks later, there may be 50 tons of fish aboard. This kind of fishing certainly differs, for example, from that of the Gold Coast, described on page 32.

In Japanese waters. The greatest fishing nation in the world is Japan. Japanese fishermen outnumber those of any other country. Before World War II, almost one-fourth of all the fish caught in the world were taken by the Japanese. During the war there was less fishing, but since then their work has increased again. Next to rice, fish is the most important food of the people of Japan.

There is great variety in the fish and in fishing methods in Japan. Herring, sardine, tuna, cod, mackerel, and many other fish common in the United States are plentiful in Japanese waters. The boats vary in size from huge trawlers to small rowboats. Many fishermen who live in little villages use only small boats, and fish near the shore. Each man's catch is small. But there are thousands of these fishermen. All together, the small boats along the coast account for at least half of the total Japanese catch.

Other Ways of Hunting, Trapping, and Fishing

There are other hunters, trappers, and fishermen in the world today whose ways of working are somewhat different from those already described.

Certain Indian tribes in South America, for example, use spears instead of blowguns in their search for wild game and fish. Many Negro peoples in Africa hunt with bow and arrow. Some of these African tribes are famous for their "silent trading." On returning from a hunting trip, they may go to certain banana groves which belong to farm villages. There they gather as much fruit as they need. In exchange, they leave some meat for the farmers, who will come for it after the hunters have gone back to the forest.

Figure 43 shows a trapper in Louisiana. Several dozen muskrat skins are drying on the rack in front of his cabin. The trapper returns to this cabin each evening after visiting a long line of traps which he has set in the marshes. He and other trappers make a total catch of millions of muskrats in that one state each year.

The work of fishermen is extremely varied. In addition to the work already described, some of them fish for sponges near Florida, or for sharks off the coast of California, or for lobsters along the coast of Maine. In every inhabited continent there is some commercial fishing in lakes and rivers, as well as in the sea. In the Mississippi River, for instance, large numbers of catfish are caught. From the Great Lakes come trout, whitefish, and others.

A hundred years ago, many fishermen from both sides of the Atlantic fished for whales. At that time whale oil was much in demand for use in lamps. Now, however, only a few men fish for whales. Kerosene and electricity have taken the place of whale oil for lighting purposes, and over-fishing has greatly reduced the number of whales. Men must go farther and farther to get them. Nearly all of the whales now caught are taken in the ocean near Antarctica.

Some Things in Common

Depending directly on natural resources. In spite of the great variety in these resources and in ways of using them, some things are true of nearly all who make a living by hunting, trapping, or fishing. All these workers depend directly on animal resources—birds, wild animals, and fish. All must go where the resources are to be found. A Sakai tribe moves to a new location in the forest. An Eskimo chooses to live in a particular place because of an abundance of seals. A fisherman sets sail for the Grand Bank. A trapper moves into the Louisiana swamps for the winter season. In general, throughout the world commercial work is more and more taking the place of subsistence hunting, trapping, and fishing.

Depending on the work of others. As we learned from the graph on page 28, only a small part of the world's people are hunters, trappers, or fishermen. In the United States less than one worker in a hundred belongs to that group. But in the world as a whole, many other people depend on these workers, not only for food but for other things, too.

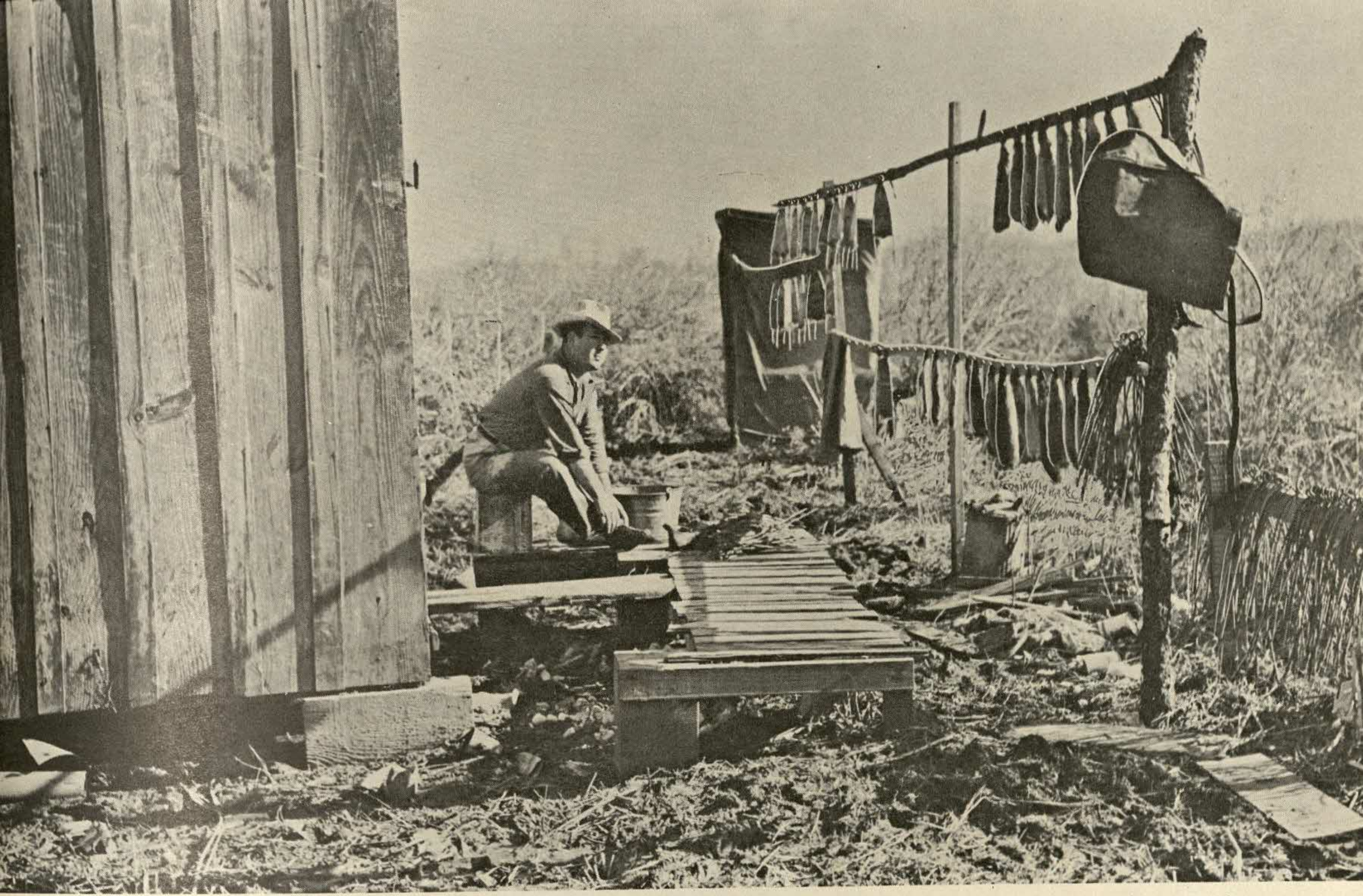


Figure 43. A trapper in Louisiana

Marion Post Wolcott

Some products of their work may be found in most of our homes. And the work of the fisherman alone is related to the work of many other men. Fish oil, for example, may be used in paints, varnishes, insect sprays, printing inks, and soap. And fishermen buy ships, nets, fuel, and many other things.

Conserving natural resources. All of us therefore, should be concerned with the conservation of the natural resources upon which the hunters, trappers, and fishermen depend. If carelessly used, a resource may be lost forever. If wisely used, the resource may increase in value through the years.

Helps in Learning

1. Does the life of the Sakai suggest a thinly settled or a thickly settled area? Why? Why is it unlikely that hunters would build large cities?
2. In what way are Gold Coast fishermen dependent on forest resources?
3. Explain what connection there might be between the work of a man in a steel mill in Pittsburgh and an Eskimo.
4. All the Eskimos in North America would not fill one of the larger football stadiums in the United States. What do you know about the land of the Eskimos that suggests why a large population could not make a living there?
5. Some fishermen prefer to own their own little boats and work alone. Others prefer to work as crew members on larger boats. What advantages and disadvantages do you see in each way of working?
6. Do you suppose the Louisiana trapper uses, himself, all the muskrat skins in the picture (p. 39), or does he sell them? Is he then a subsistence worker or a commercial worker?
7. Name three or four things that you could buy in your community that have been supplied in whole or in part by hunters, trappers, or fishermen.
8. Are there any things produced in your community that hunters, trappers, or fishermen might want to buy?

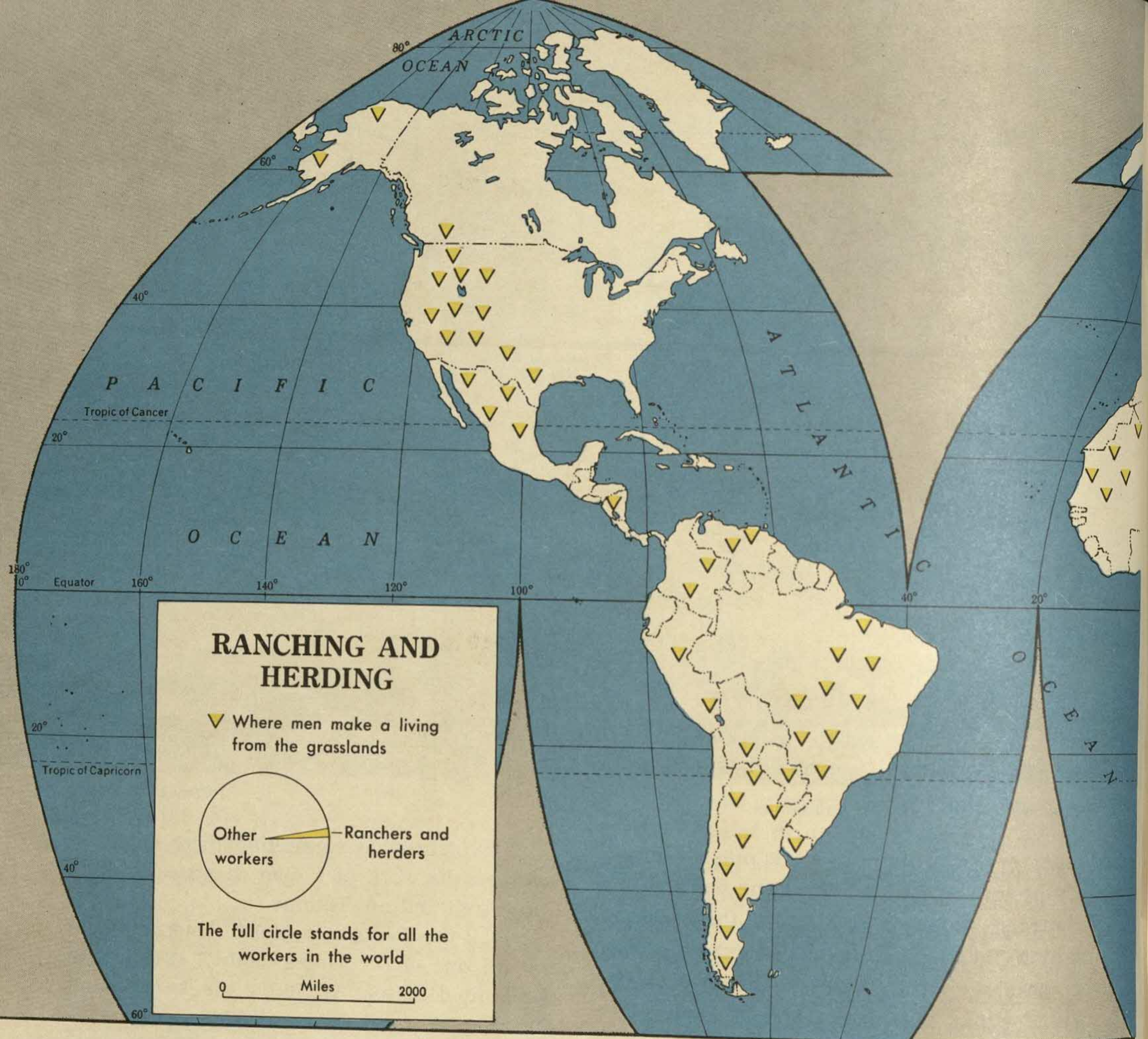


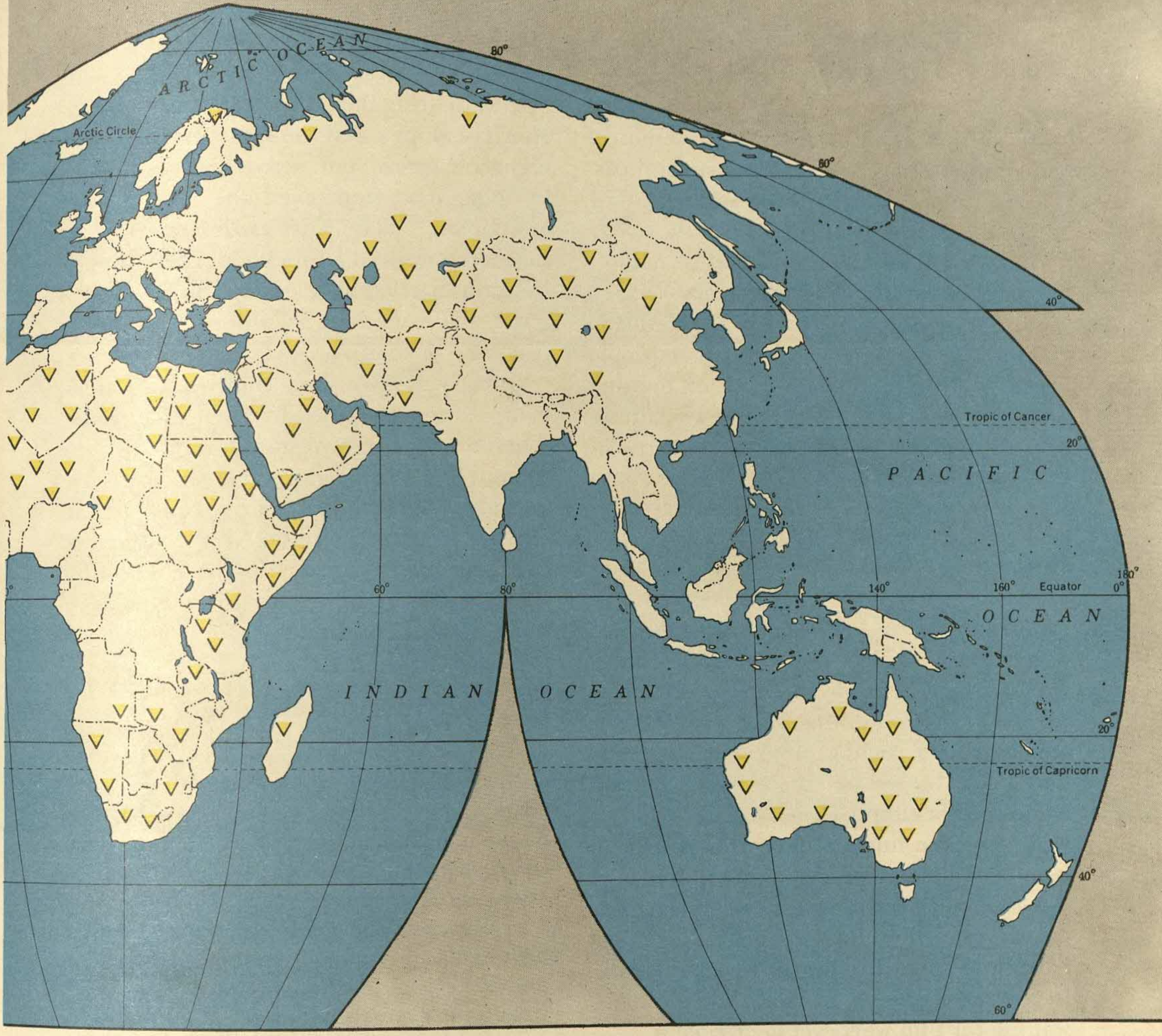
Figure 44

RANCHERS AND HERDERS

Using the Grasslands

Another great natural resource. No one knows exactly when men first herded livestock on the grasslands. Certainly, it was a long time ago, in the Stone Age (p. 24). Ever since that time, a part of the world's people have been ranchers and herders. They depend directly for a living on another great resource, another of nature's gifts to man, the natural grasslands.

The map above shows the more important areas of ranching and herding in the world today. The atlas (pp. 368-395) helps to show



© C. W. Sorensen

what these lands are like. You can see that the chief areas of ranching and herding are thinly settled lands (pp. 370-371). Most, but not quite all, are lands where there is not enough rain for growing crops (pp. 372-373). In some areas, it is warm all through the year. But most ranching and herding is carried on where summers are warm or hot, winters cool or cold.

There are many more ranchers and herders in the world than there are hunters, trappers, and fishermen. Yet the ranchers and herders, like the hunters, trappers, and fishermen, represent only a small part of the total number of workers in the world. The graph on the map above and the graph on the map on pages 28-29 show clearly that this is true.

Differences between rancher and farmer. Not all the world's livestock belongs to ranchers and herders. Many farmers also have livestock. In fact, in some farming areas there may be more cattle than in some ranching areas of the same size. The essential difference is in the basic resources used. Farmers in general depend on *soil* resources for growing crops, some of which may be fed to farm animals. For ranchers and herders, on the other hand, *natural grasses* are the basic resource. Many farmers have some land in natural pasture, and many ranchers have small fields of grain. But to one group of people, the major resource is soil for crops; to the other, natural grasses used as pasture for livestock.

In the beginning. Men have made many guesses about how it happened that people began to herd animals instead of hunting them. Some suggest that it began when hunters captured young animals from herds of wild cattle or sheep. The boys in the camps may have made pets of these wild calves or lambs. Perhaps when the animals were grown, they did not run away. By then, they would have lost their fear of man, and they would have learned to depend upon the food which man provided for them.

However it came about, herding had many advantages over hunting. From their tame animals people could get milk, and from milk they made butter and cheese. The herders had a regular supply of meat all through the year. For the hunters often it was feast or famine. When game was plentiful and luck was good, they had plenty to eat. When game was scarce or their luck was poor, they might have little to eat for days or weeks at a time. In general, the herder had meat "on the hoof," waiting for him whenever he needed it.

The Industrial Revolution brings changes. For many centuries, herding continued with little change. Some men had more wool, hides, or meat than they could use themselves. This surplus they sold. In one sense, therefore, theirs was commercial work. But for several thousand years most herding was subsistence work.

The Industrial Revolution made great changes in work with livestock as well as in other types of work (pp. 24-25). On the one hand, more and more people lived and worked in cities, needing food which they did not produce themselves. On the other hand, the machines of the Industrial Revolution helped to bring them the food they required. New fast ships sailed the seas. Railroads and highways spread out across the continents, bringing food from even the most remote grasslands. Today many cattle are raised on ranches in western United States, are shipped by train or truck to feed lots in the central states, and from there are shipped by train or truck to packing plants in the cities.

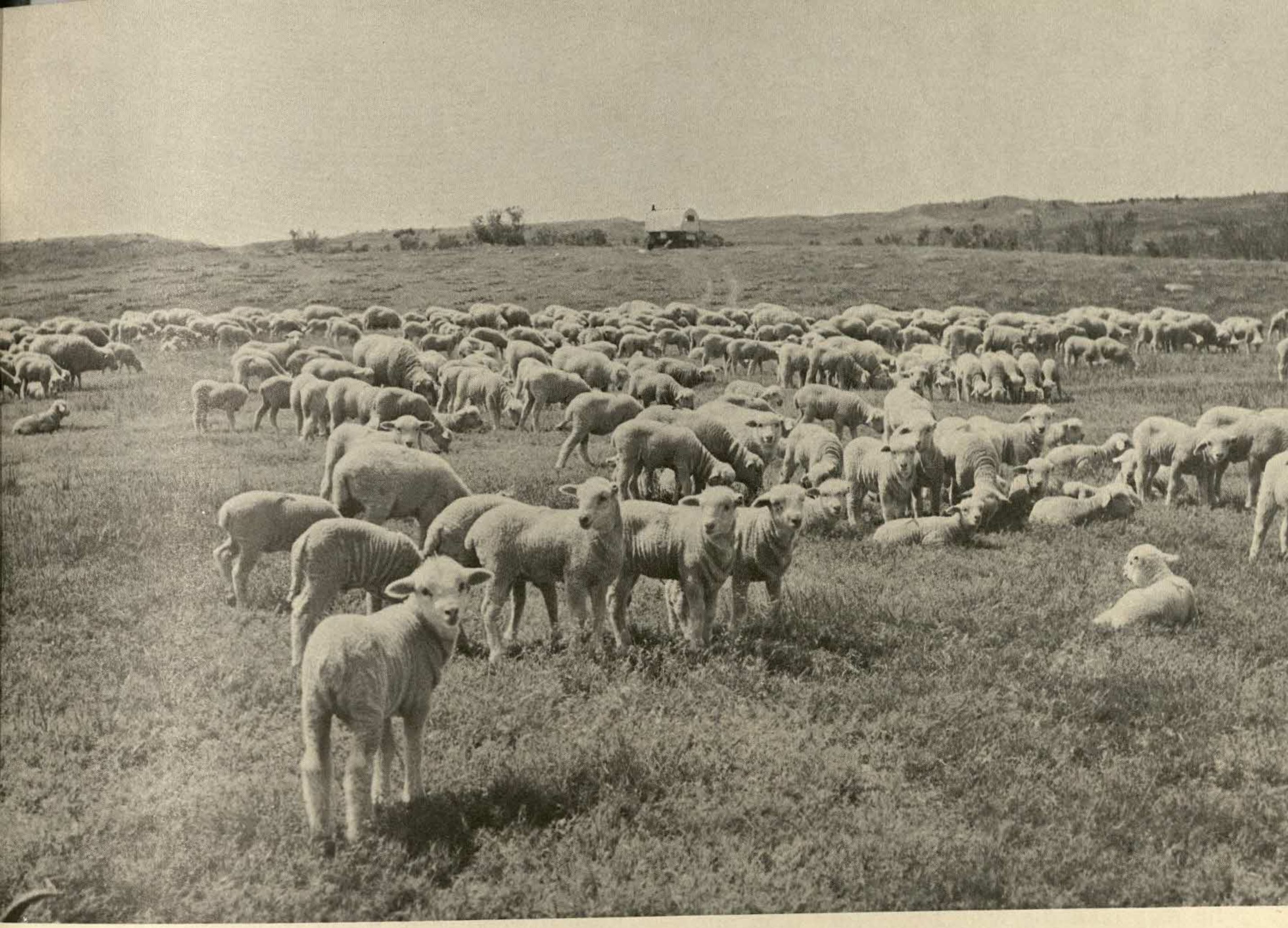
In early days, in some thinly settled areas, many cattle were killed for their hides alone. The meat was thrown away, simply because there were not enough people near-by to eat it, and it would spoil before it could be carried to distant markets. Now refrigerated freight cars, trucks, and ships make it possible for fresh meat to be carried thousands of miles without spoiling.

Helps in Learning

1. Find on the map on pages 40-41 the areas of ranching and herding in western United States and in Argentina. Find these same areas on the rainfall map (pp. 372-373) and the population map (pp. 370-371). Are these lands of heavy or light rainfall? Many or few people?
2. Ranchers and herders of early times got both food and clothing from their flocks. Name several items of food or clothing that are made from animal products today.
3. Explain ways in which the world's ranchers and herders were affected by the Industrial Revolution. Were commercial workers affected more, or less, than subsistence workers? Why?

In North America

Where the ranches are. The map on pages 40-41 shows that the chief grazing lands of North America are in the western part of the continent, reaching from Mexico across western United States into Canada (p. 382). This is ranch country—a land of sheep and sheepherders, of cattle and fences and cowboys. Some animals graze where a thick mat of prairie grass covers the plains. Some are



Arthur Rothstein

Figure 45. Summer pasture

pastured in desert lands, some in forests on the mountains. Except for isolated valleys and scattered oases, all this land is too dry for farming. Most of the land has never been plowed.

Sheep and sheepherders. Sheep outnumber the other livestock in many of these grazing lands. The picture above shows a fine flock of sheep in Montana. They are cared for by a herder who lives in the covered wagon in the distance. His is a hard and lonely life. His only helpers are a couple of dogs. They help him guide the flock and keep away wild animals, such as coyotes, which might kill the sheep. When the grass gets too short, the herder hitches a team of horses to the wagon and moves with his flock to another location, then to another, and another.

Some ranchers are fortunate in having enough grass for their sheep near their ranch homes. Other ranchers, however, must drive their sheep into the higher plateaus or mountains for the summer, where grass grows well and the weather is cool. In autumn the shepherds bring the flocks back to the valleys for winter pasture or feeding. Some roads in the West have become known as "driveways," because of the many thousands of sheep which use them in moving back and forth between summer and winter pastures.

Shearing time probably is the most exciting time on a sheep ranch. Most of the work is done by men who make a business of it, and "follow the season," as they say, perhaps all the way from Texas to Canada. Shearing may begin near the Mexican border in February. As one week follows another, spring moves north and the shearers move with it.

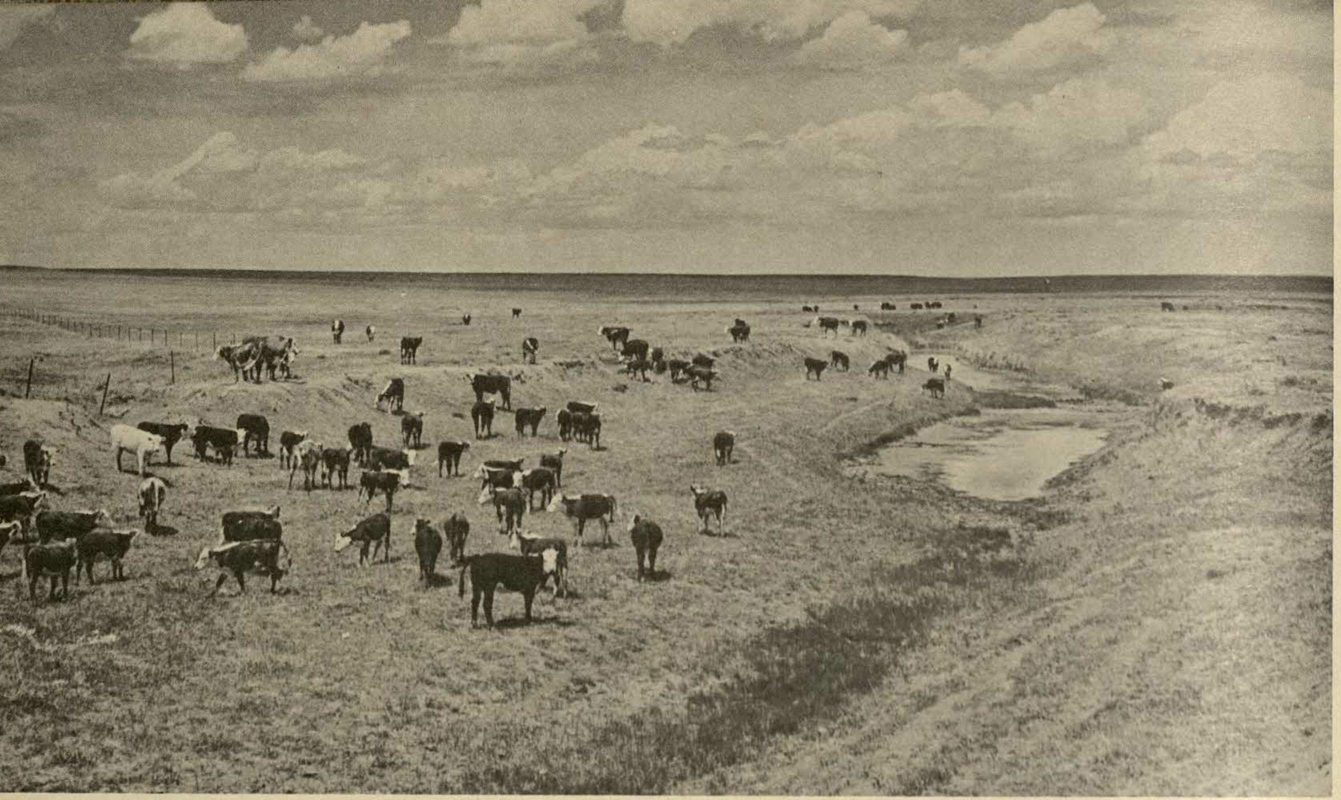


Figure 46. In summer

© *Ewing Galloway*

Men once used ordinary shears for this work, but the modern shearer uses costly power-driven clippers. With this equipment he may take the wool from more than one hundred sheep in a day. After shearing time, the wool is baled and taken by truck to market.

Cattle and sheep are not ordinarily raised together. In one area in western Texas, however, one occasionally sees cattle, sheep, and Angora goats in the same pasture. This is the greatest goat-raising area in our country. Mohair, much used in upholstery, is made of the hair of Angora goats.

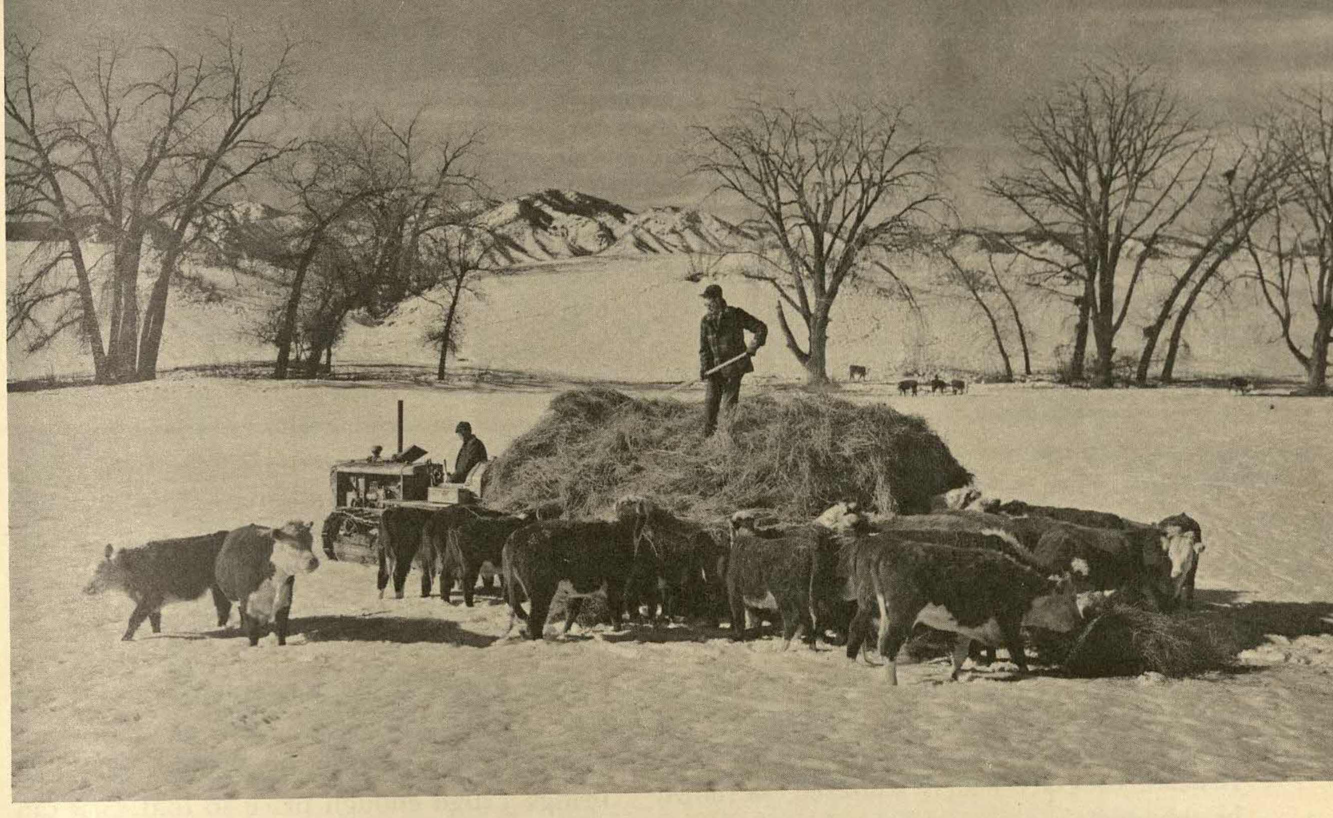
The cattle ranches. The picture above shows part of a cattle ranch on a vast plain in Colorado. The land belonging to this ranch reaches all the way to the horizon. A ranch of this size is not unusual in the ranch country of western North America. Where rainfall is light and where grass is thin, it may take 50 or more acres of land to support even one cow.

The small pools of water in the picture call attention to a problem which is common to all ranchers and herders—water. When there is a little less rain than usual, the pastures may dry up. Water holes, like those in the picture, also dry up. Cattle go hungry and thirsty. Many of them may die.

Even in good years, many areas have been over-grazed, that is, people have tried to pasture too many animals on a particular piece of land. As a result, some of the grass died out, and the bare soil was exposed to wind and rain. Then the topsoil was blown or washed away, and the land became almost worthless. Now, the best ranchers plan carefully to make sure that not too many cattle are grazed in any one pasture.

When winter comes. Winter always has its problems for the rancher. Many cattle graze in the high mountains and plateaus during the summer. Then they are brought down to pastures in sheltered valleys for the winter.

In most places, however, livestock must have some extra feed in winter. Many ranchers fence off part of their land and cut hay there for winter use. Some plant small fields to clover or alfalfa. Others buy hay from farmers in the irrigated oases scattered through much of the region.



© *Ewing Galloway*

Figure 47. In winter

In Canada and in the northern part of the United States, winter brings icy winds and drifting snows. In spite of this the cattle may get part of their feed by eating the dried grass in places where the ground has been swept bare by the wind. Sometimes, though, all the grass is covered with snow, and there is danger that the animals will starve. Then feed must be carried to them at once. The picture above shows a rescue party which has brought hay to cattle that were starving because of the thick layer of snow on the ground.

Then and now. A hundred years ago, ranching in the West was somewhat different from the modern ranching shown in the pictures on pages 43, 44, and 45. At that time, men herded their livestock almost anywhere they wished. Most of the land belonged to the government. There were no fences.

Later, farmers began to move in. Many of them settled along the little streams which had provided water for the ranchers. They also settled along the new railroads which pushed westward across the plains and mountains to the Pacific. Soon windmills appeared, and barbed-wire fences separated farm land from grazing land, and one man's pasture from another. Frequently there was trouble, between the farmer and the rancher, and between one rancher and another. The quarrel between the sheep ranchers and the cattle ranchers was particularly bitter. Stories of these early days have been told over and over again—cowboys, six shooters, cattle thieves, and roundups.

The cowboys of today still ride horseback and work with the herds, but the tales of the old West do not fit the new West. A modern cowboy does not spend his time hunting cattle rustlers. Instead he watches to see that the animals have good grass and enough water. When necessary, he drives the herd to new pastures. He checks the fences and the windmills to make sure they are in good order. He helps choose the animals which should go to market. Some cowboys even work with tractors, as shown in the picture above. Today most cowboys are about as familiar with automobiles as they are with horses.

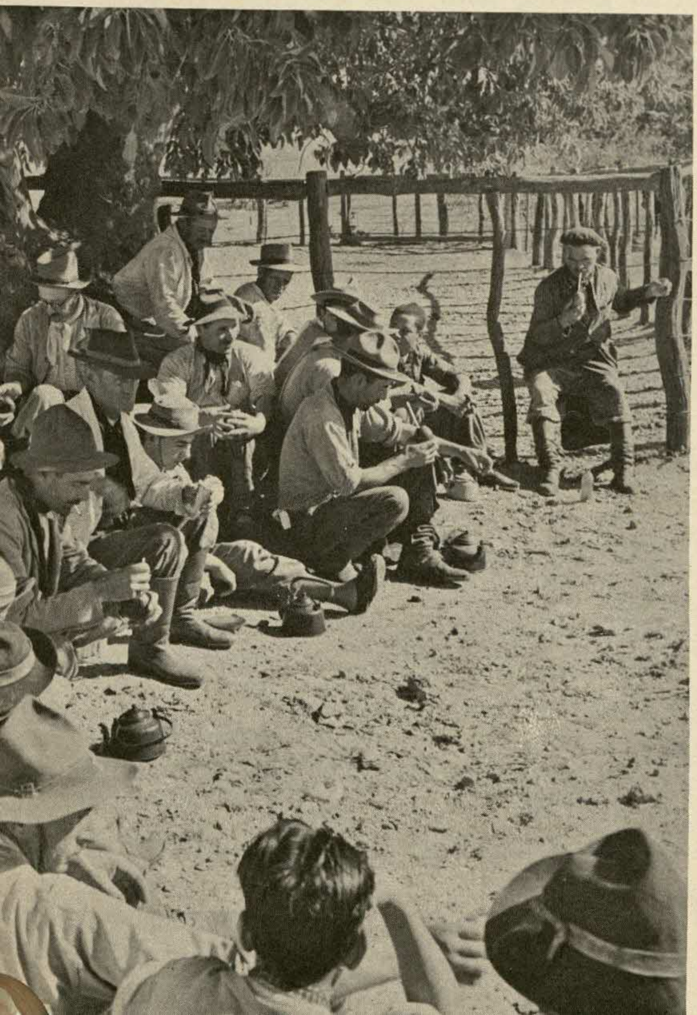
In the past, a rancher and his family had at best a lonely life. It is still true that the nearest neighbor may be miles away. But three inventions have done much to overcome their isolation—the telephone, the automobile, and the radio. It is not uncommon for ranch people to drive 50 miles to go shopping or to see a movie. The radio is far more than a source of entertainment. The rancher listens regularly for reports of the weather, and for market reports. The warning of an approaching storm or news of a change in the market may be worth many dollars to him.

In South America

Grazing lands in the tropics. The grazing lands of South America are not in one large area, as are those in western North America. Instead, they are widely scattered, as shown by the map on pages 40-41.

Figure 48. South American cowboys

© Screen Traveler, from Gendreau



Some of the grazing lands are in the *tropics*, that is, between the Tropic of Cancer and the Tropic of Capricorn (p. 383). It might appear that these areas would have many advantages for ranching—warm weather, plenty of rain, and a year-round growing season for grass. But not all tropical lands are warm, or have heavy rainfall or year-round pastures.

In the high Andes, the coldness that goes with elevation offsets the warmth that goes with location near the equator. As a result, it is never warm or hot in these high mountain pastures. At one ranch in the Andes of Peru, for example, frosts may come in any month. It is too cold for most crops. The herdsmen wear heavy woolen clothing all year. In spite of the weather, many thousands of sheep find pasture in these lands. The wool brings a high enough price so that men can afford to ship it a long distance to market.

In the grazing lands along the Orinoco and on the plains of Paraguay and interior Brazil it is never cold. In most places there are at least 40 inches of rainfall each year (pp. 372-373). Still ranchers face problems of drought, for most of the rain falls in the summer season. Winters are so dry that the grass turns brown. The water-holes dry up. Dust is everywhere.

Isolation is another problem. Cattle may need to be driven overland hundreds of miles to market. There are also problems of insects and diseases in these tropical lands.

Some of these handicaps can be overcome in part. Ranchers may grow extra feed to carry the cattle through the dry season. New highways and railroads would make it easier to get cattle to market. Improved breeds of livestock may be developed that will be better suited to this climate.

In Argentina and Uruguay. By far the most important grazing lands in South America are in Argentina, Uruguay, and in part of Brazil next to the borders of these two countries. In Argentina and Uruguay, particularly, commercial ranching is much like that

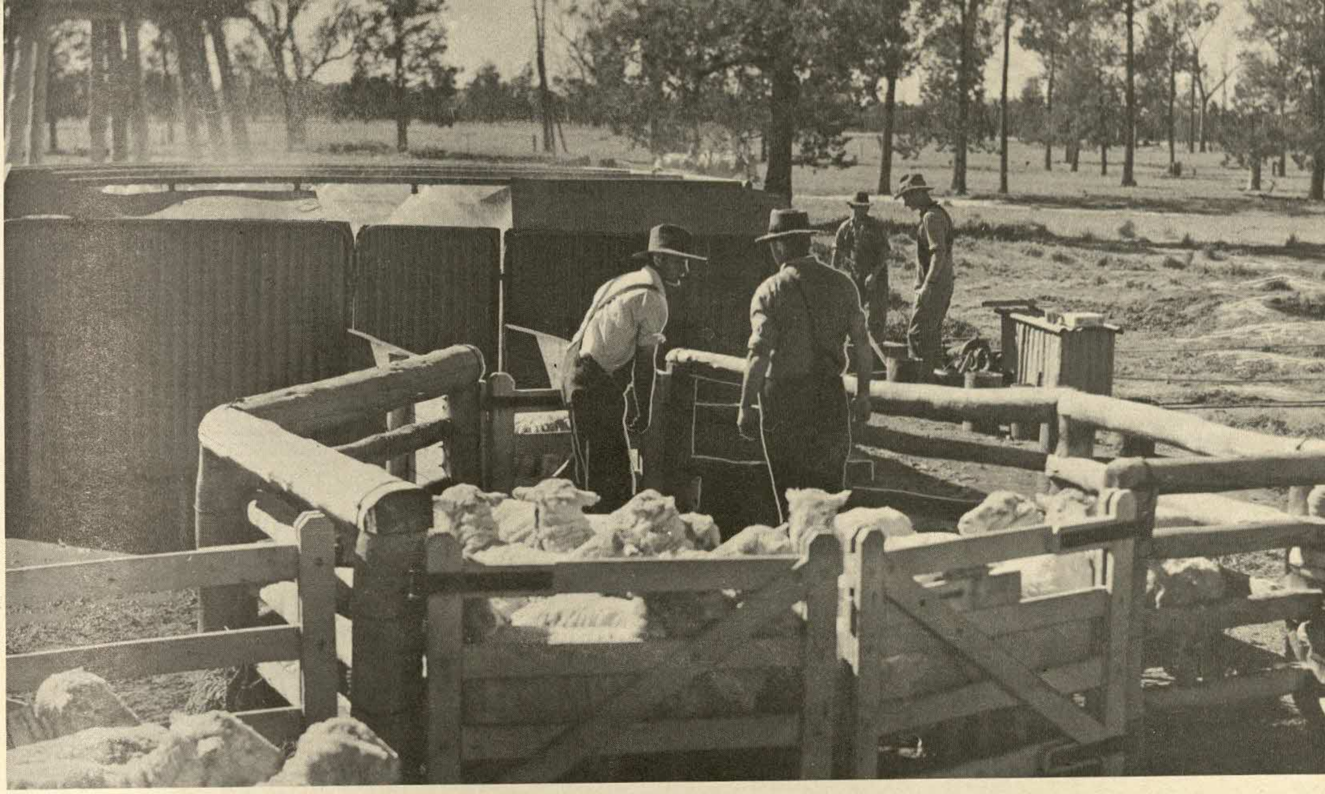


Figure 49. Shearing time in Australia

Courtesy Australian News and Information Bureau

in the grazing lands of western North America. Millions of sheep and cattle are raised each year. The breeds of cattle and sheep are similar to those in our country. Even ranch life is similar in many ways.

The cowboys of our country might find much in common with the South American cowboys, or *gauchos,* shown in the picture (p. 46). These gauchos live on a huge ranch in Uruguay, doing much the same work as cowboys do in North America. When this picture was taken, the gauchos had gathered at one of the corrals to rest for a few minutes, and to have a drink of maté, the popular South American tea. Each one has his own little kettle for heating the water. The tea is sipped from a gourd through a long metal tube, somewhat like a soda straw. In a few minutes the gauchos will be on their horses again, caring for the thousands of sheep and cattle on this modern ranch in South America.

In Australia and New Zealand

"Stations" in Australia. The picture above was taken on a great *sheep station,* as a sheep ranch is called in Australia. It is shearing time. The sheep in the pens are waiting for their wool to be sheared by power-driven clippers. The shearers may begin their season's work in central Australia in August and move south with the season.

Raising sheep is probably the most important business in Australia. There are usually more than 120 million sheep in the country. Wool is the chief export.

Cattle, too, are counted by the millions in Australia. Some cattle stations are enormous. Several are larger than the state of Connecticut, and at least one is larger than all of Belgium. We may guess that it takes many acres of pasture to support one animal.

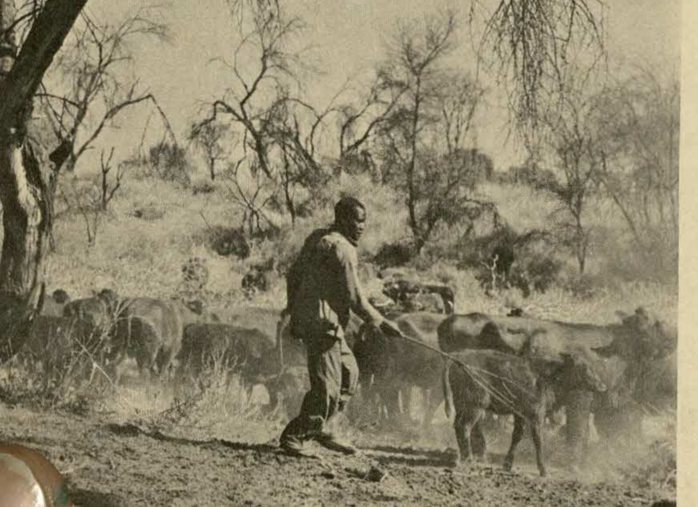
A glance at the map on pages 40-41 tells us that the grazing lands of Australia almost circle the continent, leaving an empty area in the interior. This empty center of the continent is a great desert (pp. 391, 373). There is little ranching along the southwestern and southeastern coasts. These areas are the chief farm lands of the country.

Problems of the ranchers. The ranchers of Australia face problems and handicaps not unlike those of ranchers in other lands. Isolation is one problem. Some stations are so far from railroads or towns that it takes three or four months to drive the cattle to market. Lack of water is another problem, for most of the continent is a dry land (pp. 372-373). Fortunately, many wells have been drilled, but some areas do not have enough water, either from rainfall or from wells.

Some other difficulties faced by Australian ranchers are not shared by many ranchers elsewhere. For example, the many millions of rabbits in Australia eat much grass that the livestock need. In some years wild dogs have killed thousands of sheep. But many miles of special fences have been built to hold the rabbits in check. The wild dogs have been hunted without letup. So, in spite of many difficulties, Australia has become one of the great ranching regions of the world.

In New Zealand. Ranchers in New Zealand escape many of the difficulties faced by the ranchers of Australia. New Zealand is a cooler and rainier land than Australia. In fact, the lowland pastures of New Zealand are like green carpets of grass during most of the year. It is not surprising, then, that for its size New Zealand, also, is an important land of sheep and cattle.

Figure 50. On a ranch in South Africa © *Three Lions*



In Europe, Africa, and Asia

Three great grazing lands. In these three connected continents, millions of square miles of land are given over to ranching and herding (pp. 40-41). These pasture lands may be grouped into three general areas: (1) the plateaus of southern and eastern Africa, (2) a wide desert belt which reaches across northern Africa and middle Asia, and (3) the *steppes,* or dry pasture lands, of the Soviet Union (pp. 386-387, 390). There are other grazing lands of less importance which include pasture lands in Spain and Scotland, and areas along the Arctic coast where reindeer are herded. Each of the major three areas is different in some way from the others.

In the plateau lands of Africa. There is much commercial ranching in the Union of South Africa. Some of the huge ranches there would remind us of those in Australia with many thousands of acres of land, great herds of cattle or sheep, and problems of insects, water, and transportation.

The picture at the left shows a native herder on one of the large ranches near Johannesburg. He is driving some beef cattle through the brush to the home corral. It is common in this part of Africa for herders to walk rather than ride.

In part of this plateau land, the subsistence herding of cattle is more common than commercial ranching. The cattle belong to the native peoples whose lands have not been taken over by the white man.

Cattle have other great values to these people besides supplying milk, meat, and leather. In general a man's wealth and social standing is measured by the number of cattle he owns, regardless of whether those animals are good or poor. Accordingly each family tries to raise as many cattle as possible, caring little

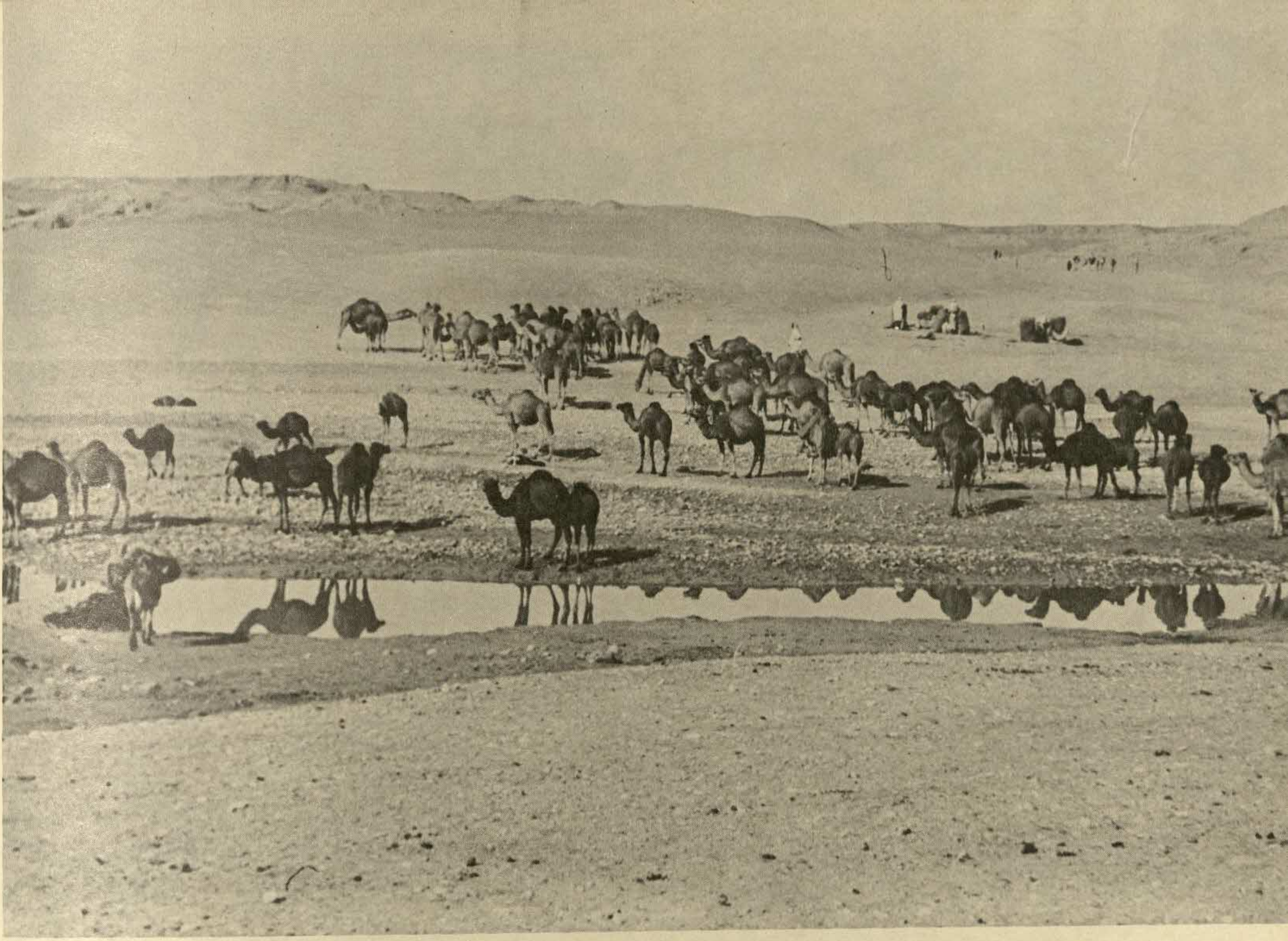


Figure 51. Camels in the desert

Photo by author

about quality. As a result, nearly all the land is over-grazed, and good beef or dairy cattle are rare in the natives' herds.

In the deserts. The picture above was taken near the edge of the Arabian Desert. Here, camels are the most important kind of livestock. They are raised chiefly for use in transporting men or goods. Although the land seems entirely barren, the camels actually graze in the desert. There they find enough small bushes or scattered bunches of grass to live on. The water in the foreground comes from a spring in the desert.

As shown by the map on pages 40-41, a wide belt of ranching and herding extends across two continents, from the Atlantic coast of Africa almost to the Pacific coast of northern China. All of this grazing land is dry. The edge of it corresponds almost exactly with the 10-inch rainfall line (pp. 372-373). In eastern Asia, the yak and the two-humped Bactrian camel are raised rather than the one-humped camel shown in the picture. In many parts of this vast area, some sheep, goats, and horses also are raised. Almost everywhere the people are nomads who live in tents and move about with their flocks, always in search of grass. Almost all are subsistence herders.

The Kababish—a desert people. The school children of Khartum, in the Sudan (p. 390), study about the Kababish. These are nomadic Arab people who herd their camels, goats, and sheep in the desert west of Khartum. Through the years the Kababish have learned where there is likely to be grass and water at each season of the year. In May they move south from a certain place, in late June they turn northwest, and so on. They always leave untouched the grass near one group of wells, so that they can pitch their tents there in winter, when most of the other pastures and wells have dried up.

While in their winter camp, the children

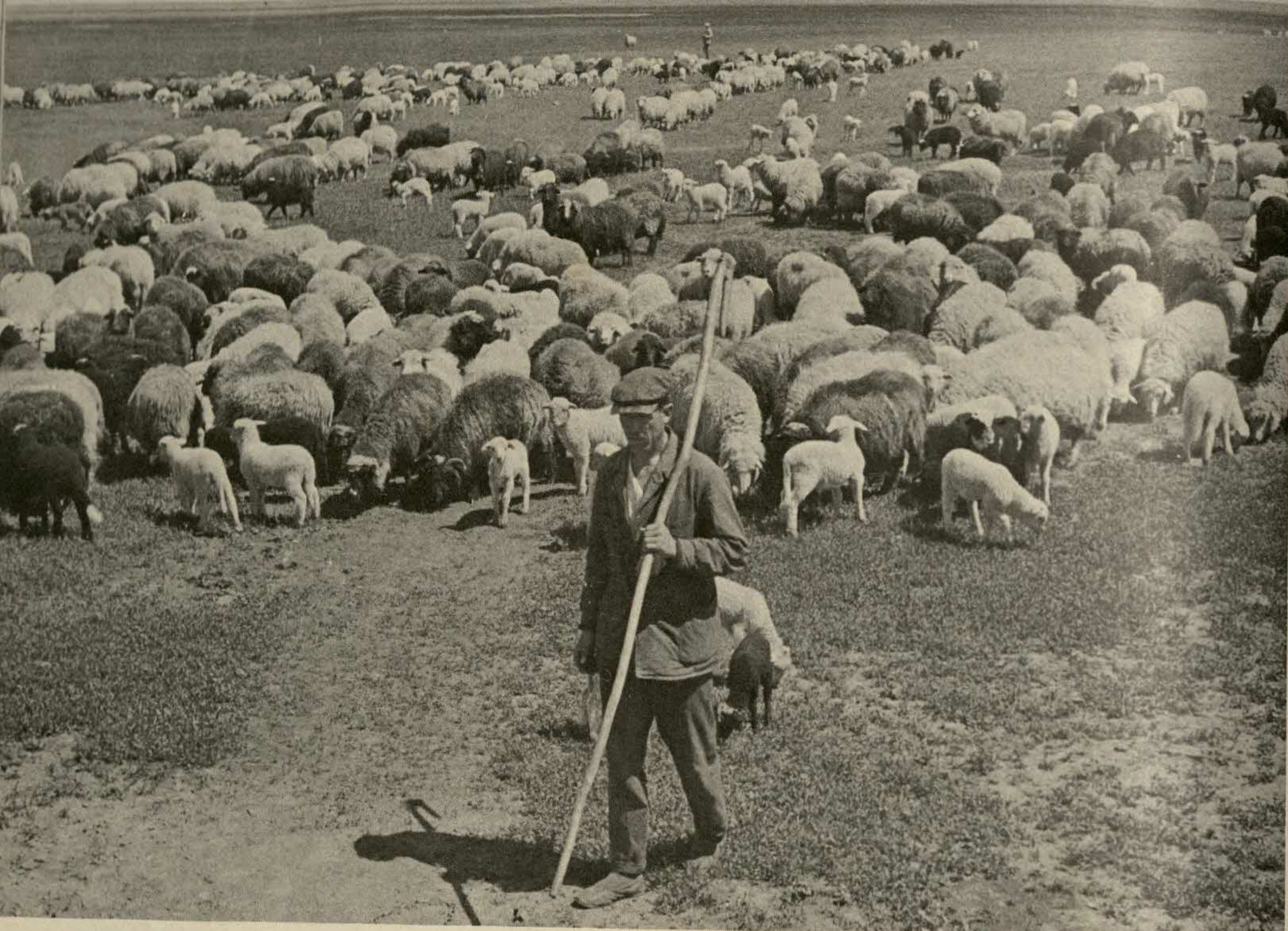


Figure 52. Herding in Russia

© *Sovfoto*

spin camel and goat wool into coarse threads. The women, in turn, weave the threads into cloth or carpets. The older boys make saddles and leather bags. The men, meanwhile, drive some of the extra animals to an oasis town and there trade them for grain, cotton cloth, salt, coffee, and sugar.

Other nomadic tribes in the dry lands of Africa and Asia may do their work a little differently. But in general they use the natural resources much as do the Kababish.

In the Soviet Union. The map on pages 40-41 shows that areas of ranching and herding extend far into the southern part of Russia, particularly north and east of the Caspian Sea (pp. 386-387). In that region there are barren deserts and fertile, well-watered oases. There are also the steppes, vast, dry pasture lands, on which many thousands of sheep and cattle are grazed. Travelers from the United States have remarked that these steppe lands look much like the plains of western Texas or of eastern Colorado.

The sheep and goats in the picture above are grazing on the steppes. The herdsman is neither the owner nor a hired worker. The entire herd is the common property of all the people of a collective farm or ranch. The herder is one of the members of the collective farm who has been chosen to care for the animals.

Other Herders and Other Livestock

The stories and pictures so far have introduced us to the major regions of ranching and herding in the world today. But there are many other ranchers and herders and livestock. The ranching and herding in Alaska is reindeer herding (map on pp. 40-41). Nearly all of it is done by Eskimos. Goats and donkeys are raised in many parts of the world.

And in the Andes Mountains of South America, the llama may graze side by side with sheep and cattle.

Only a few horses are raised in the deserts or on the plateaus of Africa, but they are common in most other grazing lands, on modern ranches as well as in the herds of nomads. The picture below shows a horseman who herds horses on the dry plains of Mongolia (pp. 386-387). The pole with its loop of rope is used whenever he wants to catch a horse. An American cowboy would use a lasso.

Changes in Ranching and Herding

As the years pass, the work of ranching and herding is becoming more and more commercial. Camel herders in Saudi Arabia, for instance, are buying more cloth, making less of their own. Even the modern rancher produces less and less of what he uses. His automobile and his radio, for instance, may have been made a thousand or more miles away. This increase in commercial work means more markets for factory-made goods, more trade, and, of course, a far greater interdependence of all the people concerned.

In Africa and Asia, nomad peoples are depending less and less on ranching and herding. More and more, they are turning to farming. Throughout the world the quality of livestock is gradually improving.

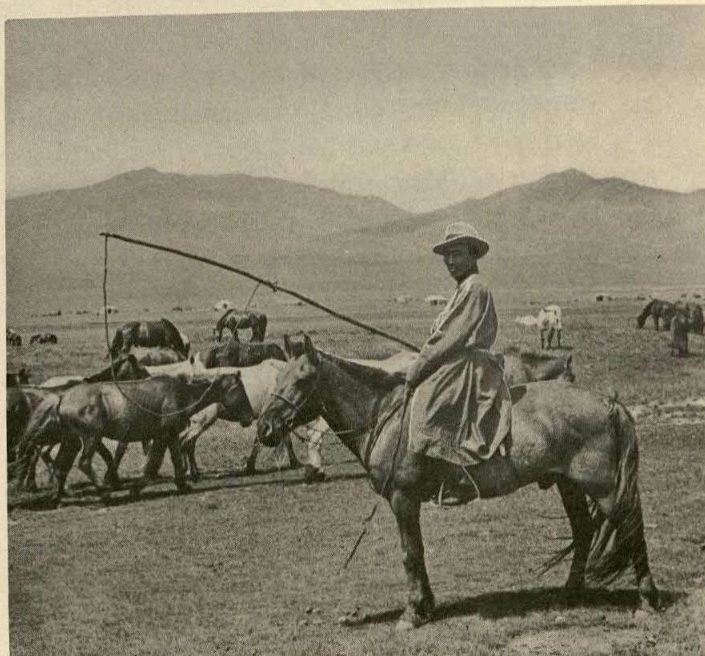
Not all the changes are in the right direction. In many of the world's grazing lands, ranchers and herders are over-grazing the land. Over-grazing and careless land-use in general have been so serious in the United States that in much of the ranching region the grass is only half as thick as it once was. In many places it now requires four acres to graze a cow where, a few years ago, only two acres were required.

Fortunately much has been done to correct these harmful practices. The United States Forest Service, for example, has shown that, where grazing is carefully managed, the land may come to support twice as many cattle as before. Ranchers are learning the advantage of letting grass reseed itself, which it cannot do if constantly eaten off to the level of the ground. These are only examples of the way progress is being made. But it will take many, many years to rebuild what has been lost.

Helps in Learning

1. In North America the shearers move with the spring season from south to north. In Australia and Argentina they move from north to south. Use maps to help explain this difference.
2. The map on pages 40-41 shows that there is less ranching and herding within the tropics than outside. What facts might help explain this?
3. Write one paragraph telling how ranch life in the United States has changed during the past one hundred years.
4. Which three of the following people probably would have most in common: *the owner of a sheep station in Australia; a rancher in Texas; a Kababish herder; a rancher in Argentina?* Tell why you think so.
5. Today's ranchers and herders can greatly help or harm the ranchers and herders who will live 50 years from now. How can this be?
6. In Bedford you saw how different groups of workers were interdependent. How may the people of your community be interdependent with ranchers and herders?

Figure 53. A horseman in Asia *© Sovfoto*



FARMERS AND THEIR WORK

Through the Centuries

The First Farmers

How it began. As no one knows who the first herders were, so no one knows who the first farmers were. When did men, for the first time, plant seeds in order to grow food? How did they learn to produce food as well as gather it?

These and many other questions must go unanswered. The first farmers lived long before the beginning of civilization. We have no written records of those very early times. But thousands of years ago, probably some person took the seeds of certain wild grasses, put the seeds into the ground, and came back later for a harvest. The work of farming had begun.

As time passed, men gradually learned more about farming. They discovered that plants grow better if the soil is cultivated and the weeds are pulled out. They found that some dry lands could be made to produce crops by irrigation. Men also learned to make new and better tools. Perhaps a pointed stick was the farmer's first tool. In time, in some areas, a simple hoe took the place of the pointed stick.

The first farmers must have had a hard life. They had few things which made for comfort. All farm work was hand work. Yet they were better off than the food-gatherers, who had lived still earlier (p. 23). Many of these early farmers settled in permanent villages and had simple homes to live in, while food-gatherers had to keep moving about. Food-gatherers may have been hungry often, for they had to depend more or less on luck in finding the game or fish or plants they needed for food. Farmers had a more dependable supply of food than food-gatherers and a greater variety of food, too.

Some early farmers built small, simple granaries in which to keep their grain after the harvest. After a particularly good harvest they might have a little extra grain to exchange with the herdsmen for things such as hides and meat. Probably the herdsmen were glad to trade with them, because in that way they too had a greater variety of food.

In Ancient Times

After civilization began. Farming methods continued to improve, though gradually, for many years after the world's first crop was harvested. The knowledge of farming slowly spread from one area to another. In time, some of the farm villages grew into large towns, and a few of the towns became cities. Trade developed, as did simple manufacturing and government. So what we think of as early, or ancient, civilization took shape.

By this time some men had learned to write. Writing made it possible for men to pass on their knowledge and experience to later generations more easily and more accurately than ever before. This, of course, included what they had learned about farming.

Egyptian farmers. One of the earliest civilizations that we know about developed along the Nile River in Egypt. There, once each year, the waters of the Nile rose until they overflowed the banks, and spread out over the surrounding lowlands. When the flood had passed, a thin layer of fine, rich soil remained on the land, soil that had been carried down by the water from lands far upstream.

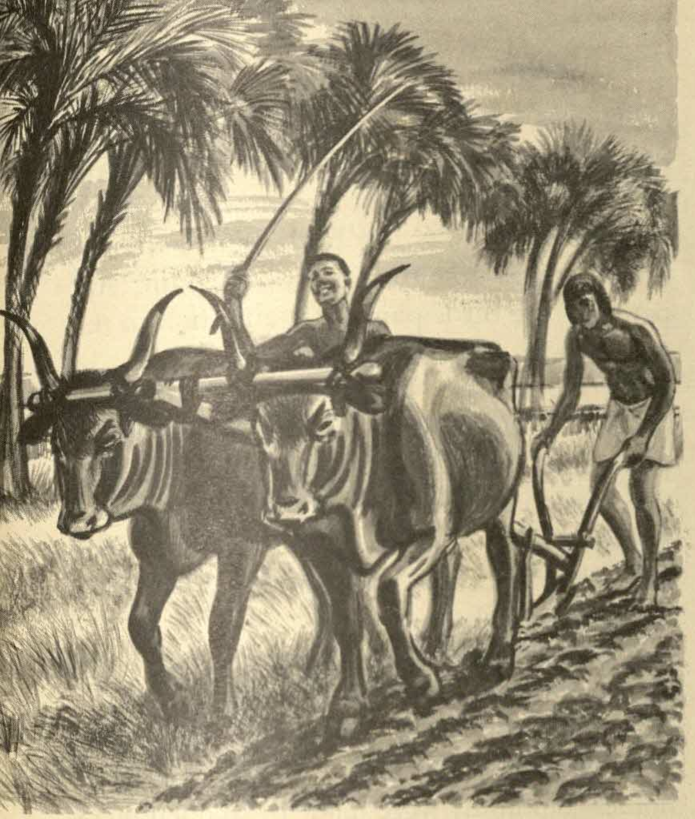


Figure 54. Plowing in ancient Egypt

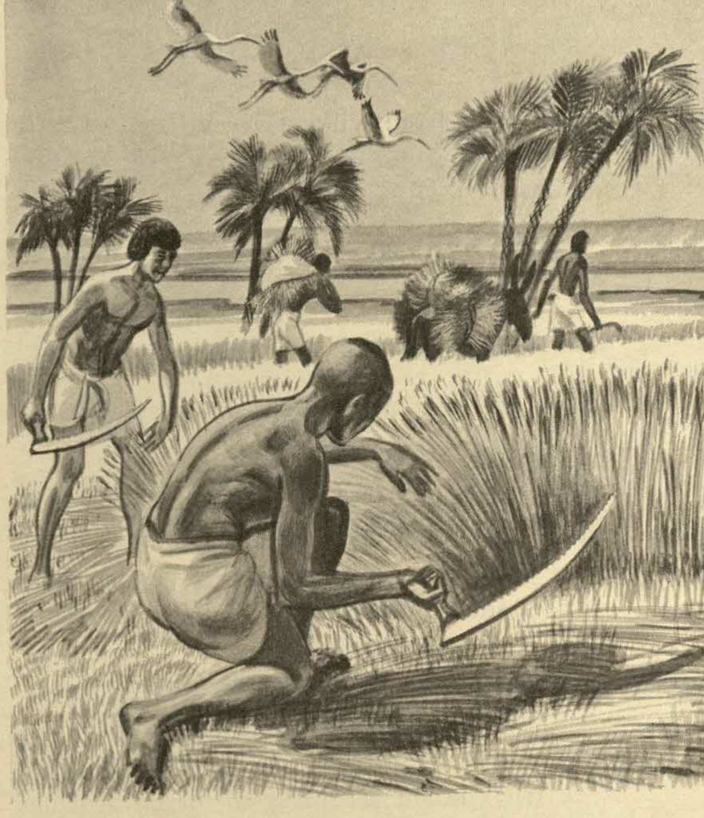


Figure 55. Harvest time in ancient Egypt

The Nile valley, then, was a wonderful place for farming. There was plenty of water and sunshine, a mild climate, and rich soil that was renewed each year. Fortunately for us, the ancient Egyptians made pictures and carvings which show many details of the farm work in their valley. The drawings on this page are based on the work of early Egyptian artists.

The first picture shows that in one way Egyptian farmers had advanced far beyond the world's first farmers. These farmers have a plow, pulled by oxen, to use in their work. At some earlier date, a thoughtful farmer had lengthened the handle of his hoe and had persuaded his oxen to pull the hoe across the field. In this way the first farm machine, a plow, came into use. Modern farmers would not consider it a very good plow. It only stirred the soil a little. The advantage was that animal power was being used to cultivate the soil.

The invention of even this simple plow made a great difference in farming. A farmer, using oxen and plow, could care for a much larger field than when he used a hoe. He could produce, then, a much larger crop than formerly. Probably he would have more *surplus* grain to sell. Until farmers produced more than they needed for themselves, there could be no large cities of tradespeople, clerks, and government officials. In fact, it is not too much to say that the civilization of ancient Egypt depended in large part upon the farmers and their plows.

Except for plowing, most farm work in ancient Egypt continued to be hand work. When it was planting time, a farmer, carrying a sack of grain, walked ahead of the plow. He scattered the seed by hand, and depended on the plow to cover it. At harvest time, the Egyptian farmer cut his grain with a sickle, as shown in Figure 55. Not until modern times did men invent machines that were satisfactory for harvesting.

On the farms of ancient Egypt farmers raised livestock of several kinds. Sheep were kept for their wool, and sometimes were driven across the fields to tramp down the soil. Donkeys carried loads to and from the fields and from village to village. Cattle pulled the plows, as you have seen. The Egyptians had dairy cattle, also. An artist of ancient times drew a picture of a farmer milking a cow, while another man held a calf which seemed to want some of the milk. The cow's hind legs had been tied, so that it would stand still and so that it would not kick the farmer. This scene would seem rather familiar to millions of farm people today.

We know little about the houses in which most farmers lived in ancient times. They have long since disappeared. Probably they were made of mud and straw. Without doubt they were very simple homes.

In Medieval Times

Little change. Farming in medieval times was not greatly different from farming in Egypt, as shown on page 53. There were some improvements, of course. Farmers were learning to use fertilizers and to rotate crops. Horses were used in the fields occasionally. Wheels supported the front end of the plow. But the fields were small, and farmers still plowed with oxen, sowed grain by hand, and harvested the grain with a sickle. As in ancient times, there was some surplus grain for sale in town and city, but most of the grain was used by the farmer, his family, and the owner of the land.

In France. The pictures on the opposite page show farm life in France just before the time of Columbus, at the end of medieval times (p. 24). These pictures were made from illustrations on a medieval calendar which, like many calendars today, had a separate picture for each month. The top picture is taken from the page for March, the middle picture from the page for July, and the third from the page for October.

In the picture for October, one farmer is sowing wheat broadcast. Another man, on horseback, makes sure that the grain is stirred into the ground by means of a harrow. A third man, holding a bow and arrow, appears to be standing in the next little field. Actually it is a scarecrow, not a man. It was placed there to scare away the birds, which were as eager then as now to feast on the grain. Apparently the birds paid little attention to the scarecrow.

In the picture for March, a farmer is preparing the ground for crops which were planted in the spring, barley, for example. In the picture for July, two farmers are harvesting the wheat which was planted the previous autumn. The two men in the foreground are shearing sheep.

Probably these farm people were no worse off than the farmers of ancient Egypt, but they certainly had few advantages. Almost none of them could read or write. The farm homes commonly were made of wooden poles and sticks, daubed with clay. "If we went inside we should see very little. The floor would be of earth, covered with . . . straw, and in the center would be a smoky fire . . . A few wooden bowls and wooden spoons, some leather or skin utensils, such as a leather water bottle, would be there; possibly a 'side of bacon,' salted and dried, would be hanging, and half hidden in the dark corner would probably be a pitcher of water filled from the stream or from a well."

Not much progress had been made, then, since ancient times. Most men farmed according to the customs of their ancestors, not knowing what really were the best ways of caring for their crops and livestock. Some men, however, had begun to try and to test other ways of doing things and had discovered certain ways of improving farm work. This kind of *experimentation* was the foundation for modern farming as we know it today.

In other lands. France, of course, was only one small part of the medieval world. In many lands, farming had made even less progress than in France. In vast areas almost no advances had been made. Far off to the east in Asia, the farmers of China and India were working in their irrigated rice fields much as farmers had worked there many centuries before. In few parts of the world had farming advanced much beyond that of ancient times.

In Modern Times

From Europe to America. It is an old story now that, after the voyages of Columbus, many thousands of people moved from Europe to the Americas. At first only a few came to the new world. Later thousands came each year.

Many of the European settlers were farmers or became farmers after they arrived. Naturally, they brought with them the knowledge of farming which was common in Europe. They also learned from the Indians about some different methods of farming and some different crops, corn, for example. In general, however, the agriculture of early Americans was the agriculture of Europe transplanted to the American continents.

The three pictures on page 56 show what farming was like in the United States at the time of George Washington, about 175 years ago. As you can see, the ways of working appear to have changed little from ancient and medieval times. A farmer of ancient Egypt probably would have known how to plow, plant, and harvest much as the men are doing in these pictures.

The Industrial Revolution affects farming. Ancient Egyptian farmers would *not* know how to operate farm machinery, such as that shown on page 57. The lights on the tractor in the upper picture are used for plowing at night, particularly during a busy season. Even the plow has rubber tires. The machine in the other picture is called a *combine*. It combines the operations of harvesting and threshing the grain, as it rolls across the field.

This new kind of farm work was made possible by the great Industrial Revolution (pp.

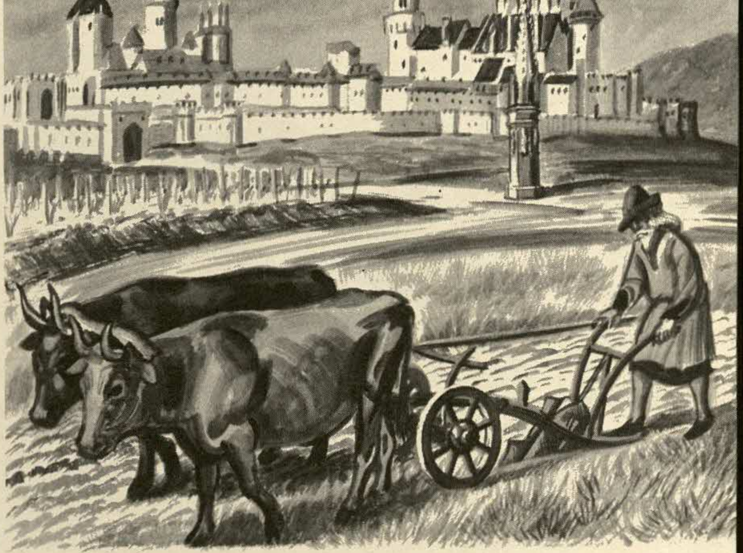


Figure 56. In March

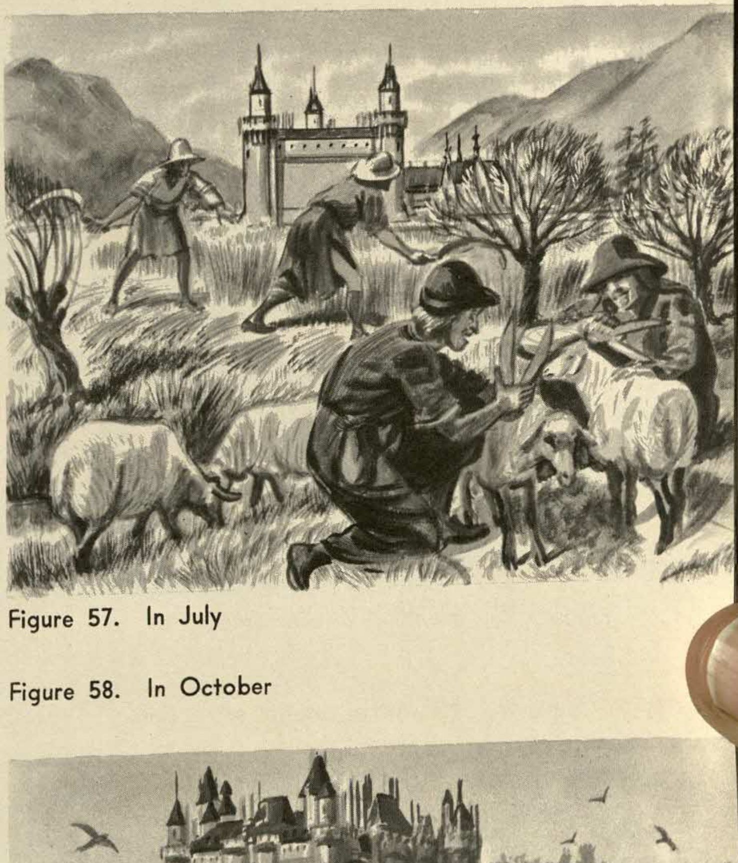
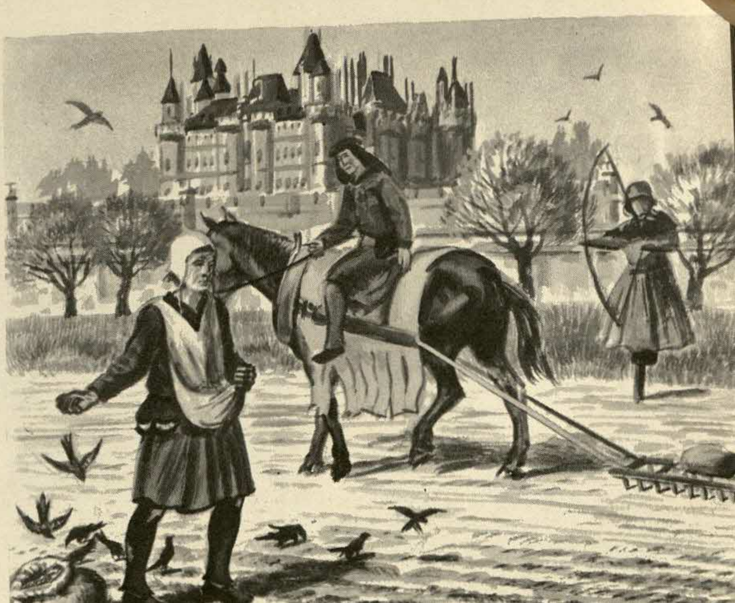


Figure 57. In July

Figure 58. In October



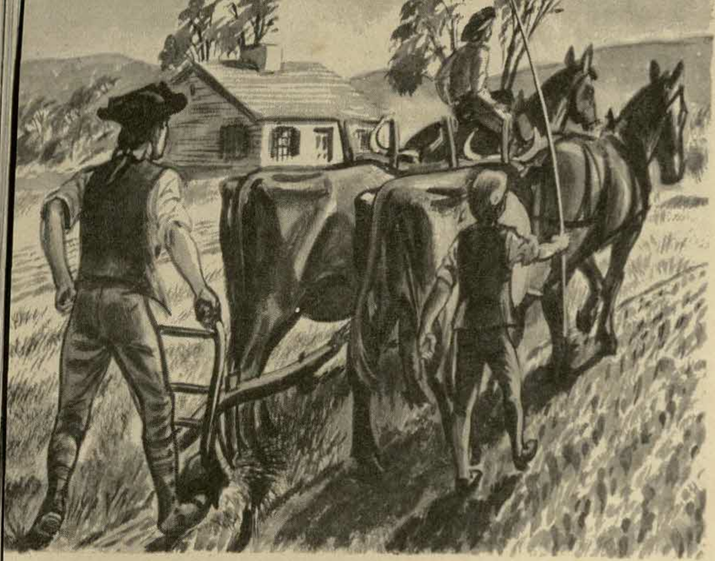


Figure 59. Plowing at the time of George Washington

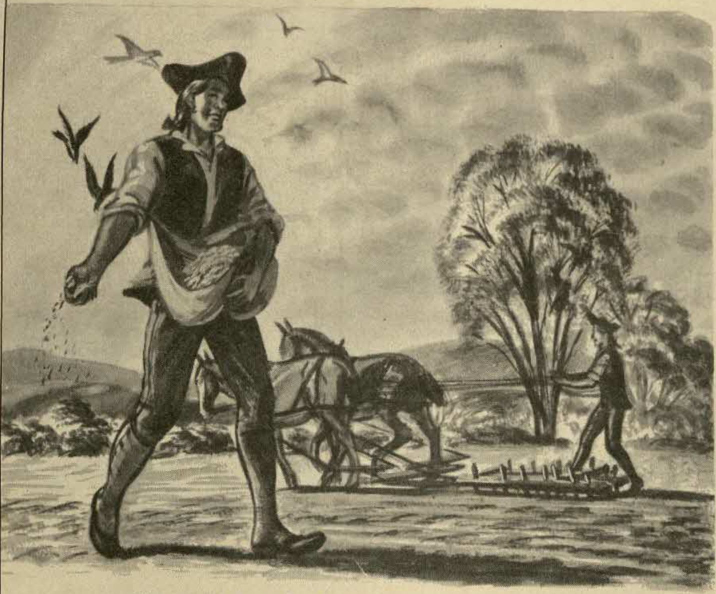
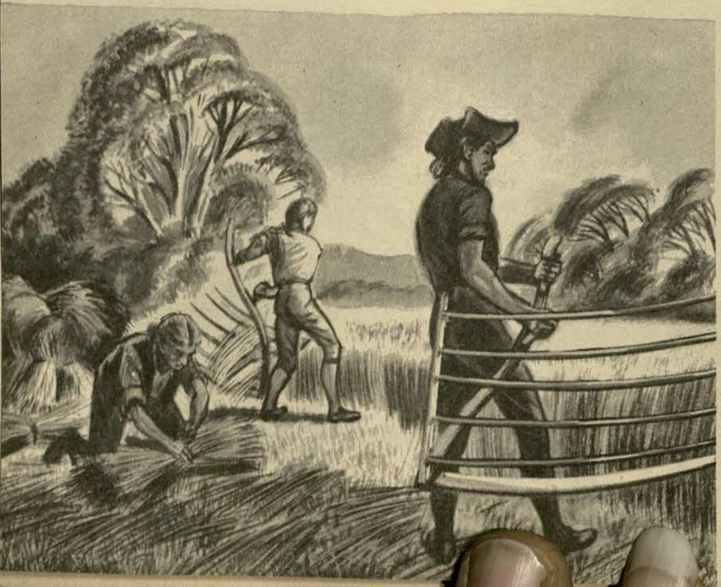


Figure 60. Planting, at the same time

Figure 61. Harvesting, at the same time



24-25). To begin with, the new, or revolutionary, ways of working affected manufacturing particularly. Men invented new machines and used steam power to run them. With these machines they made shoes, cloth, and many other things which previously they had made largely by hand.

Sooner or later, the effect of the Industrial Revolution was felt by many farmers in Europe and in the Americas, for machinery came to the farm as well as to the factory. Helped by these machines, men could grow more food. The surplus food found a ready market in the new cities, where thousands of people had gathered to work in the new factories. In fact these cities could not have existed without surplus food from the farms, as well as from the ranches (p. 42).

As we shall see later, developments in transportation helped both the farmer and the city dweller. Once a farmer's most important market was a near-by town. Now, with fast ships and trains, it is possible to send food across continents and oceans to markets thousands of miles away.

As the years went by, more men came to believe in scientific farming, based on experimentation. Scientists were developing better kinds of grain and other crops and more effective fertilizers. Farm experts learned how best to grow these crops and how to prevent pests and disease from injuring them. And almost each year new and better farm machines rolled out of the factories and on to modern farms.

With these changes came a better life for the farmer. The farmers shown in the pictures on page 57 have modern, comfortable homes. Electric light and power, books, magazines, good furniture, and automobiles are almost taken for granted in the communities in which these farmers live. A school bus stops at the gate, carries the children to school, and brings them back again. There are doctors and a good hospital within a half hour's drive of each home.

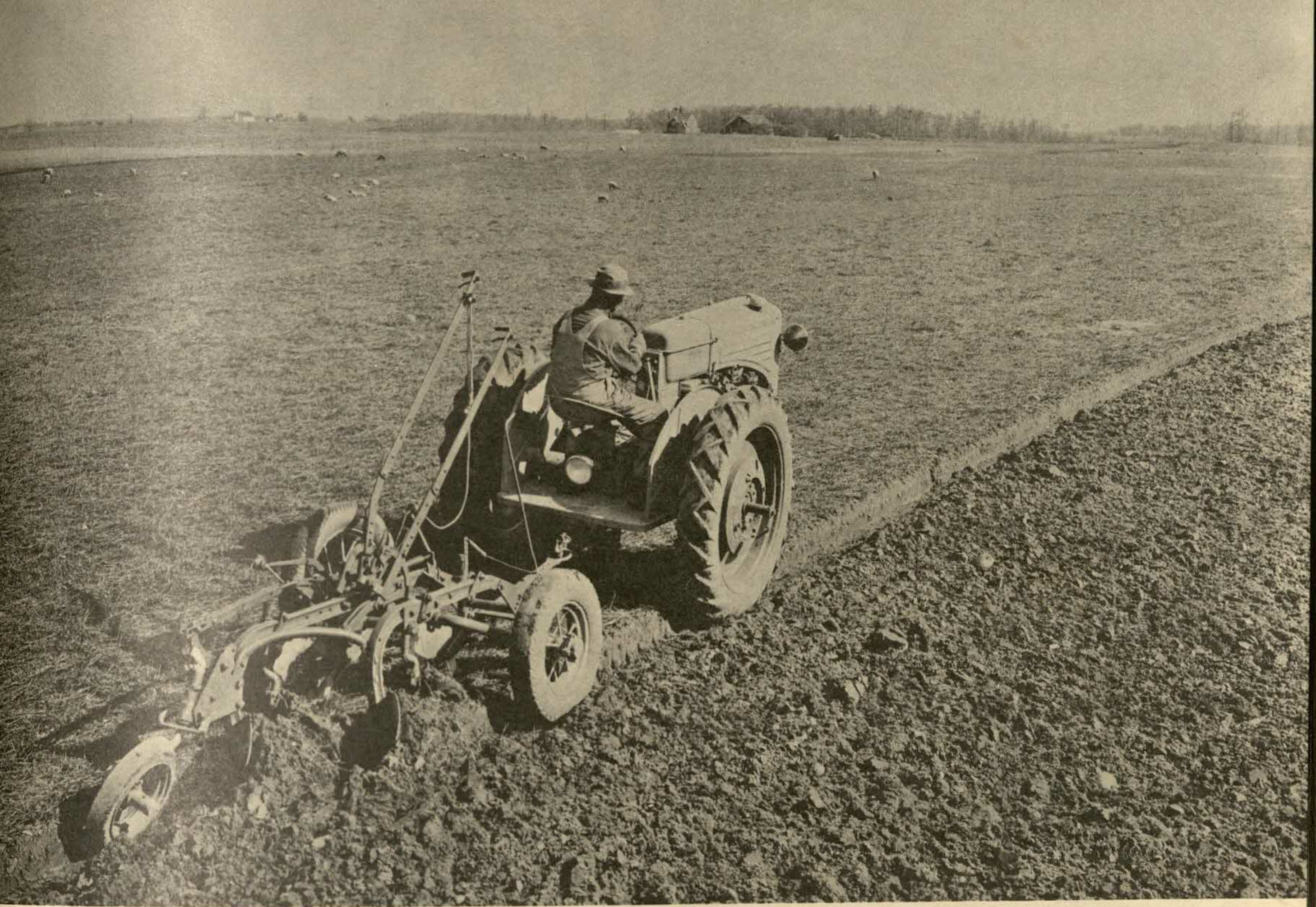
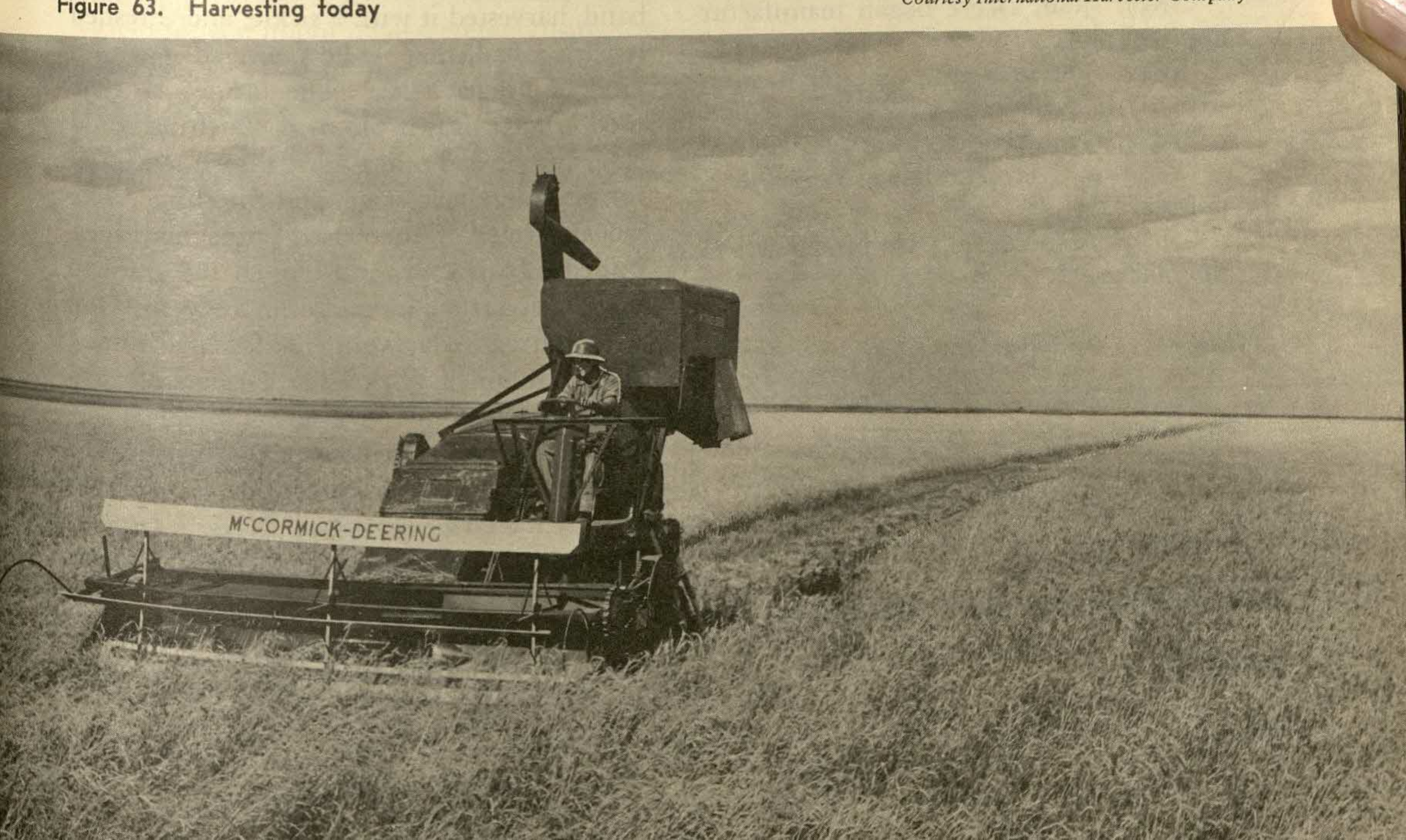


Figure 62. Plowing today

© *J. C. Allen*

Figure 63. Harvesting today

Courtesy International Harvester Company

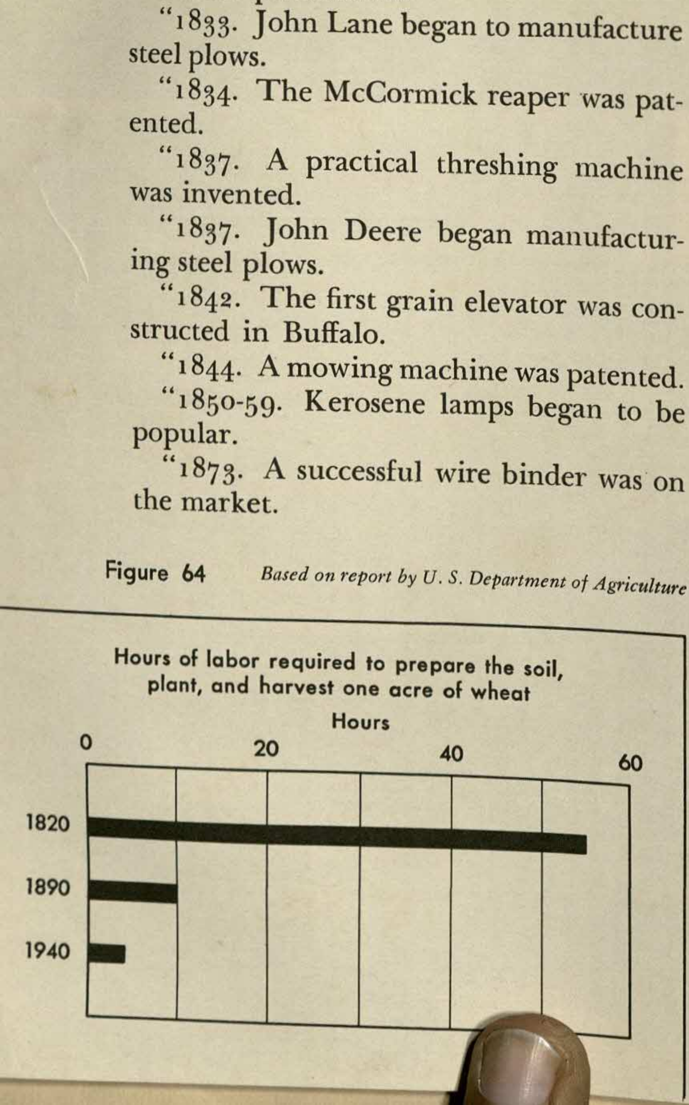


Changes have come slowly. It would be a mistake to think that these great changes came about overnight or in any one year. Instead, it was a gradual growth that extended over many years. One invention led to another, then to another.

The United States Department of Agriculture has published a book called "Farmers in a Changing World." The following sentences from that book suggest some of the many steps that helped to bring about the revolution in farming.

> In the early days of our country, "Oxen and horses were used for power, the wooden plows were crude, all sowing was done by hand, hoes were used for cultivating, hay and grain cutting was done with sickles, and threshing with flails.
>
> "1793. The cotton gin was invented, paving the way for a tremendous increase in cotton production.
>
> "1833. John Lane began to manufacture steel plows.
>
> "1834. The McCormick reaper was patented.
>
> "1837. A practical threshing machine was invented.
>
> "1837. John Deere began manufacturing steel plows.
>
> "1842. The first grain elevator was constructed in Buffalo.
>
> "1844. A mowing machine was patented.
>
> "1850-59. Kerosene lamps began to be popular.
>
> "1873. A successful wire binder was on the market.
>
> "1887. Cream separators began to come into wide use.
>
> "1890. Horse-drawn combines were in use in the Pacific coast grain areas.
>
> "1900. Farmers began to have telephones.
>
> "1915. Gasoline tractors came into use.
>
> "1915-20. Movie houses were becoming common in rural areas.
>
> "1930. 58 per cent of all farms had cars . . .
>
> "1930. The all-purpose rubber-tired tractor came into wide use . . ."

Figure 64 *Based on report by U. S. Department of Agriculture*



This is not a list to be memorized. It is worth reading carefully, however, in order to understand how a revolution in farming came about step by step.

Saving labor. The revolution in farming meant that a farmer, with the help of machines, could do more work with less effort. Therefore, these machines are called labor-saving machines. The graph on this page makes this clear, using the production of wheat as an example.

The wheat farmer of 1820 probably used a walking plow, and a bundle of brush for a harrow. He sowed the seed broadcast by hand, harvested it with a sickle, and threshed it with a flail, that is, he pounded it with a kind of hinged stick. The farmer of 1890 used a horse-drawn plow on which he could ride, and he had other horse-drawn machines for planting, harvesting, and threshing. The wheat farmer of 1940 used larger machines, pulled by a tractor, and hauled the grain to market in a truck instead of in a wagon. One wheat farmer today, using modern machinery, can do as much work as 15 farmers of 1820 could do.

The farmer of today, who has modern power-driven machinery, need not work as hard as the farmer of 1820. Driving a tractor is not as hard work as stooping all day to cut grain with a hand sickle.

Progress has been uneven. Clearly, the story of agriculture through the centuries is a story of progress—from the time of the world's first crop to this year's crop. But farmers in some parts of the world have gone far ahead of others in the use of labor-saving machinery. And some farmers have been able to get far more of the comforts and conveniences of life than have others. This is true both within the United States and in the world as a whole.

The farmers in the pictures on page 57 are not typical of all farmers in our country. Many American farmers do not have fine machines. Perhaps they do not need them or cannot use them in their particular kind of farm work. There are some farmers, however, who need them but cannot afford them. Many farmers, also, do not have modern, comfortable homes.

This uneven progress is noticed still more as we travel abroad. In some countries, for example, in parts of Europe or Australia, farmers live in good homes and use the latest scientific methods. In other parts of the world, farmers are still using methods much like those of medieval times.

The picture on this page was taken in India. If you had been in that country 3000 years ago, you might have seen men using the same method of threshing grain. First, oxen tramp the grain and chaff out of the straw. Then, the men slowly pour the grain and chaff from baskets so that the wind will blow the chaff away. Most farmers of India use methods as ancient as this.

Helps in Learning

1. Find four pictures of plowing between pages 52 and 59. Use these pictures in telling a story, entitled: "From Wooden Plow to Tractor Plow." During what period of time did the greatest changes in plowing come about?

2. Find four pictures of harvesting between pages 52 and 57. Use these in outlining a story that you might tell about harvesting from early times until now. Choose your own title.

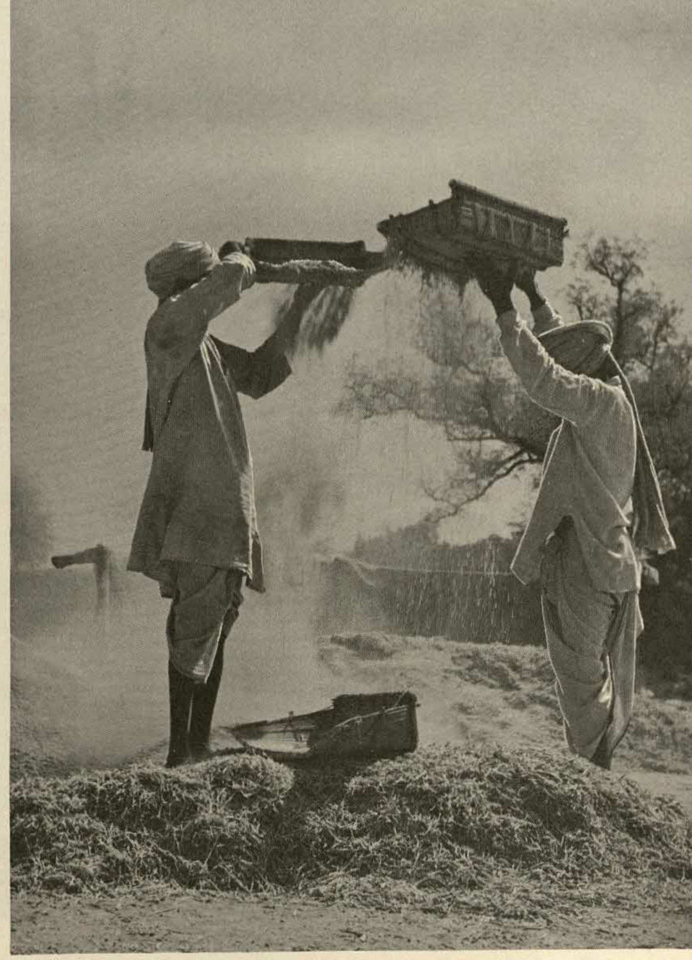


Figure 65. Threshing in India © *British Combine*

3. What is meant by the sentence on page 53, "The civilization of ancient Egypt depended in large part upon the farmers and their plows"?

4. After the Industrial Revolution, many thousands of people crowded into the cities to work in factories. How did the revolution in farming help these workers?

5. Look in an American history book for pictures of farming in earlier times in the United States. In what ways are these pictures like those on page 56?

6. Look through magazines and newspapers for pictures of farming today in various parts of the world. Use these pictures to show similarities and differences in methods of farming.

7. Whether you live in the city or in the country, there is some labor-saving machinery in use near by. Tell how one such machine saves labor. How would the work be done without the machinery? Would more, or fewer, workers be needed? Would more, or less, work be done in a given time?

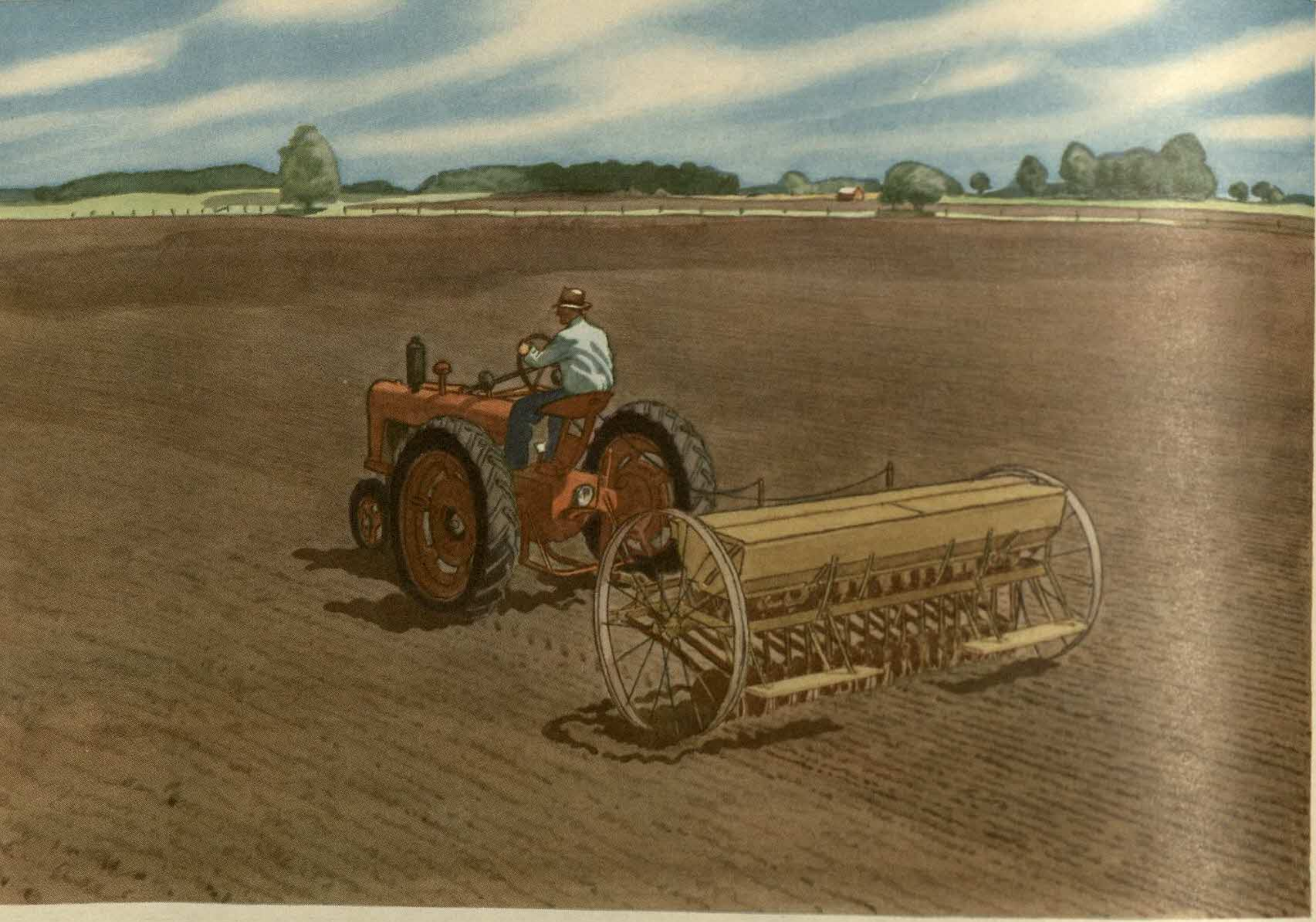


Figure 66. Good soil on a plain

From photo by J. C. Allen

Land, Weather, and the Farmer

Things in common. We have seen that there have been many changes in the way farmers worked in centuries past. We have seen, too, that there are many different ways of farming in different parts of the world today. But there are some things that in one way or another affect all farmers at all times and in all places. Every farmer is concerned about the land and the weather. Every crop must grow on some land, and even on the best land crops will not grow well unless the weather is right.

The Land

Different people might be interested in very different things about a piece of land. A man who was thinking of building a house might be concerned to know how dry and solid the land was for a foundation. A group of boys planning to lay out a tennis court would try to select land that was level and smooth. To a farmer the big questions are: "What kind of soil does it have? Is the surface of the land level? Is it smooth? Is it rocky? Is it hilly or mountainous?"

The soil. As you know, the soil is the farmer's basic resource. From the soil all plants that grow on the land get their food. The kind of soil on a farmer's land helps to determine the kinds of crops he can grow, how large these crops will be, and of what quality.

Some kinds of soil are much easier to cultivate than others. The two pictures on these

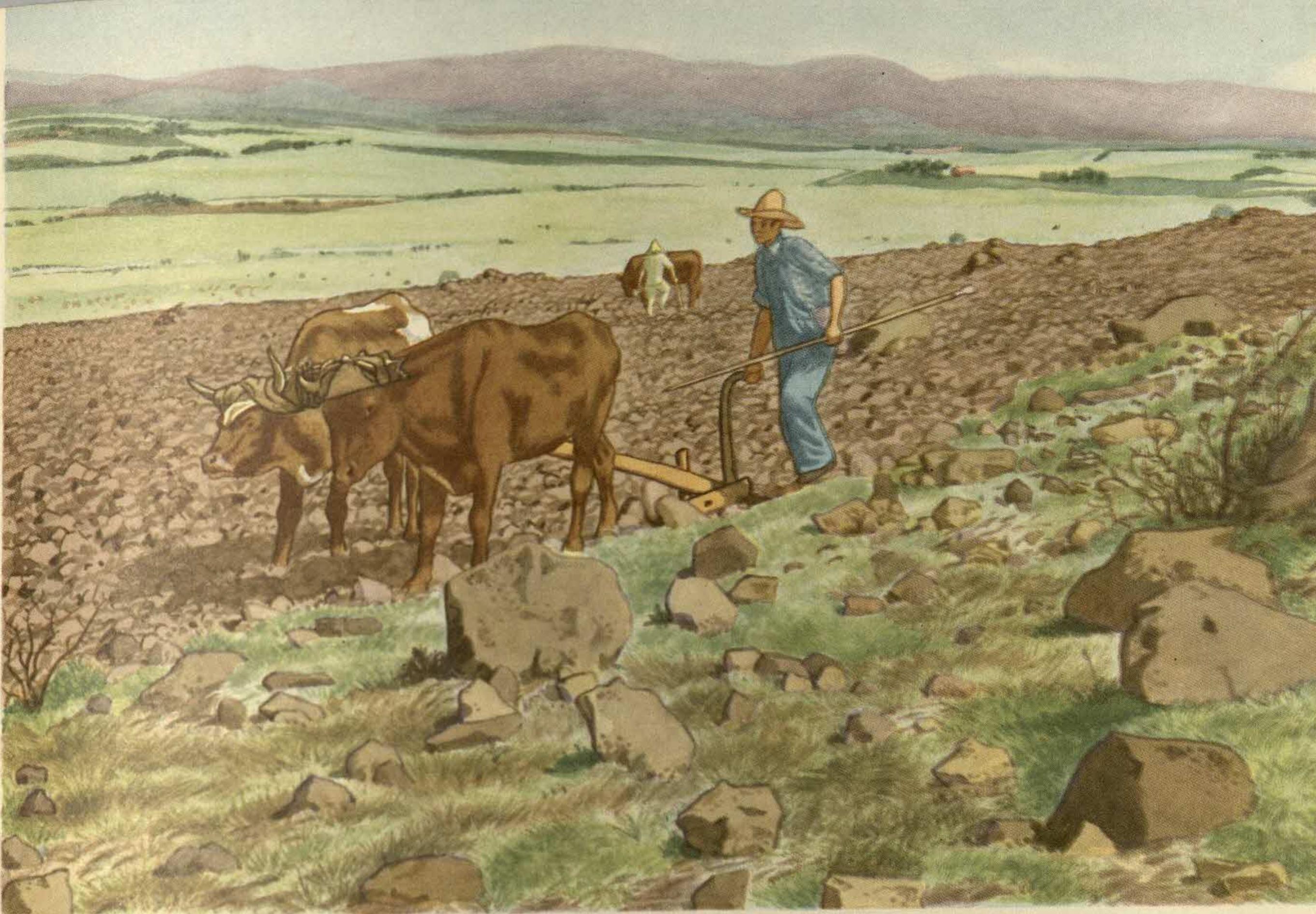


Figure 67. Poor soil on a plateau

From photo by European

facing pages show two different kinds of soil. One soil is free from stones and seems almost as fine as sugar. This soil can be cultivated easily and, if the fields are large, power-driven machinery can be used. The other picture shows a stony soil, which a farmer can cultivate only with difficulty. In this field the use of power-driven machinery would be almost impossible. These pictures show clearly one reason why the farmer is interested in knowing what kind of soil a farm has.

Soils differ in many other ways. Some are made up largely of rich, black loam; some are sandy; some are mostly clay. Some soils absorb moisture readily and hold it well; some do not. As you may have seen, soils differ in color. Some are almost black; some are gray. Some are reddish brown; some are almost yellow.

Each of the many kinds of soil has advantages and disadvantages for growing crops. A farmer must learn the kinds of crops that are best suited to the soils on his farm. He must also learn the best ways of cultivating these soils.

The surface of the land. Many terms have been used to describe the surface of the land that makes up the face of the earth. For our study we may think of land surface as being of four types: plains, plateaus, hills, and mountains. The four pictures on pages 60-63 represent these four types of land surface. The map on pages 380-381 shows where these types of land surface may be found in the world. The title of the map is *Land Forms,* referring to the form, or shape, of the surface of the land.

Plains and plateaus. The picture at the top of page 60 shows a plain in the central part of the United States (pp. 380-381). On a plain, in general, the surface of the land is rather level. In this plain the farmer has advantages. His fields can be large and regular in shape. He can use almost any kind of

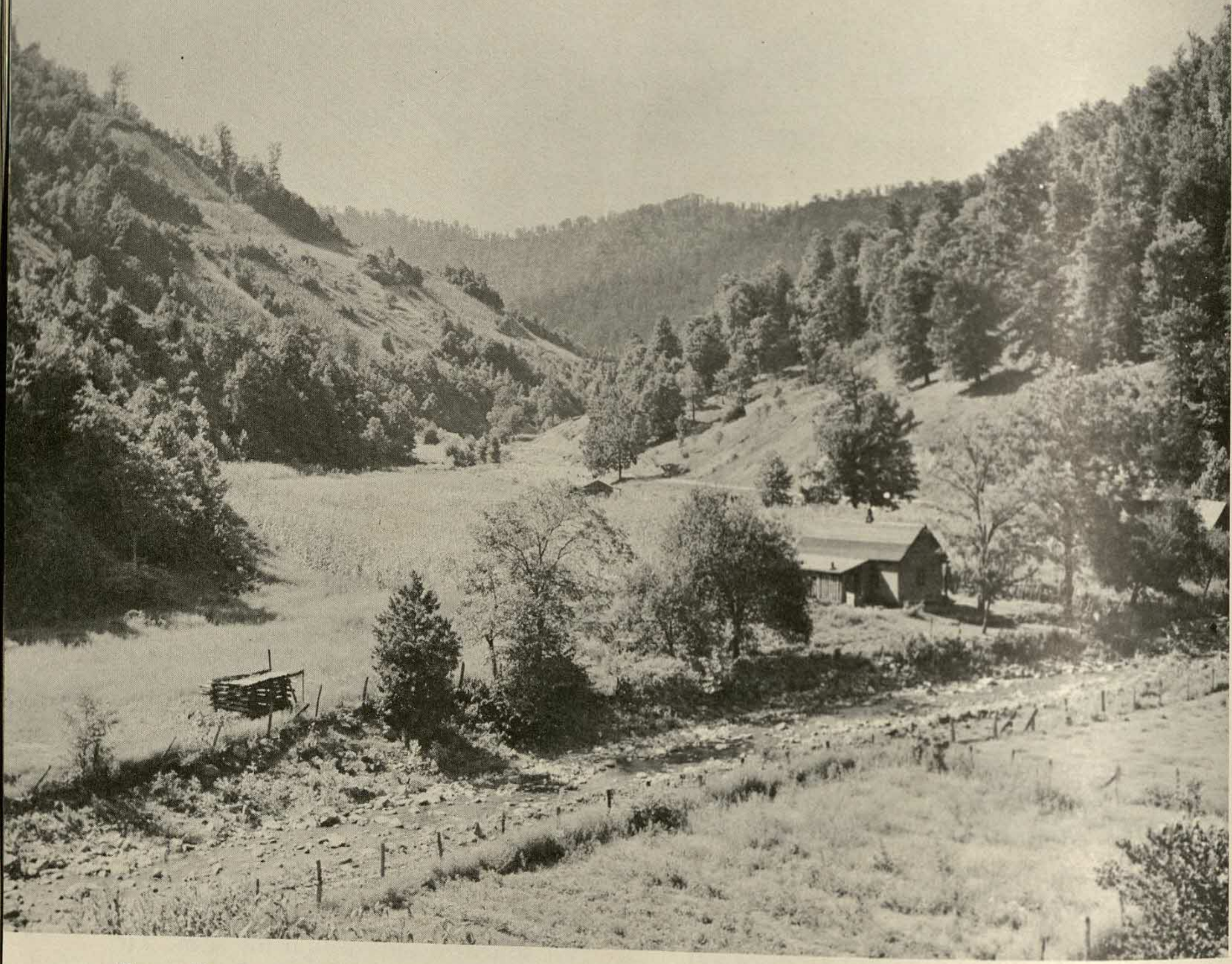


Figure 68. In the hills

Marion Post Wolcott

farm machinery. It is easy for him to haul crops to market.

Plains may have disadvantages, too. In places there is danger of floods, which may spread out over the low land. Drainage is also a problem in many areas. The land may be too wet for most crops to grow.

In many ways a plain and a plateau are alike. One may be as level as the other. The soils may be equally good or equally poor in both. The chief difference is in elevation. A *plateau* is a plain-like area which is high enough so that there is some lower land on at least one side of it. Plateaus may vary in elevation from a few hundred feet to several thousand feet or more. Perhaps the best definition of a plateau is simply "a high plain."

The plateau farmer in the picture on page 61 lives in central Mexico (pp. 380-381). It makes a great difference to him that he lives on the plateau and not on a lowland plain near-by. If he lived in the lowlands, he might grow coffee, bananas, or other tropical crops which need much hot weather. But it is colder as one goes higher and higher above sea level. On this part of the Mexican plateau it is too cold to grow these crops, for there may be frost during six months of every year. Here the farmer plants corn or wheat, which can ripen within a few months after planting.

Hills and mountains. The picture above shows a farm in the hills of western North Carolina. This is a beautiful place in which to live—with forests, hills, valleys, and small streams. But the farmer here has problems that the man on the plains may know little about. The farmer in the hills may have only a few acres that are level enough to be plowed.

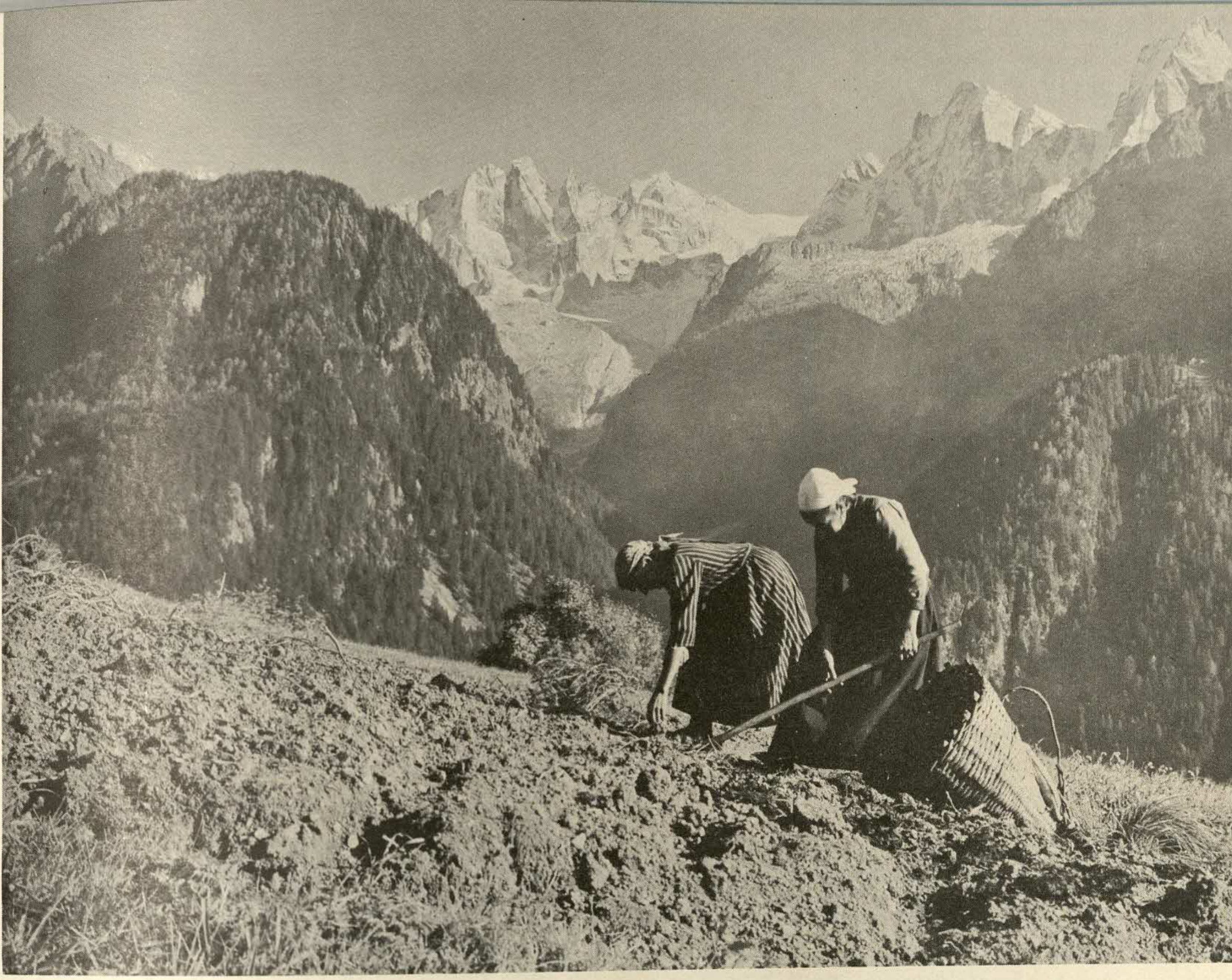


Figure 69. In the mountains

Courtesy Swiss Federal Railroads

His fields are small and irregular in shape. Unless he plans and works carefully, the soil may wash away.

Corn is grown in one little field between the hills on this farm. Corn is grown, also, in thousands of other fields on the vast plains of central United States, on land like that shown in the picture on page 60. But there are important differences in *how* it is grown. The farmer in the hills uses simple machinery in growing corn in his small field. The farmer on the plains uses large power-driven machines in his large fields. It is not so easy or so profitable to use modern power-driven machinery in most hilly land as on wide plains.

Farming in the mountains may combine the disadvantages of farming in hilly land and plateau land. Land level enough to be plowed is scarce, and crops may be held back by the cold. The mountain picture above was taken in Switzerland. It is late summer. The women are digging potatoes in a field which is on the very edge of a valley, hundreds of feet deep. Soon they will carry these potatoes in baskets on their backs to their home down in the deep valley. Imagine how difficult it would be for the farmer in the picture on page 60 to use his tractor and other power-driven machinery in this field.

Variety of surface. These four pictures, then, are examples of four kinds of surface, or land forms, in the world. Of course, not all plains look exactly like the one in Figure 66. Neither do all plateaus, hills, or mountains look alike. Many plains are not so smooth and level as the one in the picture, and some plateaus are as level and smooth as the plain in Figure 66. Hills may be more, or less, steep, and valleys wider, or narrower, than in Figure 68. Mountain tops may be rounded or pointed, forest-covered or barren.

In using the land-forms map on pages 380-381, it is well to remember this great variety in the surface of the earth. When you see the area marked mountains, for example, it would be natural to think of mountains which you have seen or of the mountains in Switzerland and the farm women gathering potatoes. But you must remember that the sign, or symbol, for mountains does not tell what kind of mountains there are in that area.

The map of North America, page 382, shows that most of western United States is a high land. Land-forms map, pages 380-381, tells us that only part of this high land is mountainous. The rest is a plateau. Each of these maps, then, tells us something different about this part of the world.

Helps in Learning

1. Explain why every farmer should know how best to use the kind of soil he has.
2. Look at the pictures on the following pages: 3, 6, 20, 43, 44, 47, 50, 57, 60, 61, 62, 63. Make three lists showing which of these pictures suggest: (1) plains or plateaus, (2) hilly land, (3) mountains. Compare your lists with those prepared by other members of your class.
3. What kind of land do you see from your schoolroom window? Is it almost level, hilly, or mountainous? Is all the land in your community the same as this?
4. What methods are the farmers (p. 57) using that they could not use on mountainous land?
5. Find the United States on the land-forms map, pages 380-381. Which covers the largest area in our country: plains, plateaus, hills, or mountains? Where are most of the plains? Where are most of the mountains? Which map in the atlas would you use to find in what part of the United States the mountains are highest? Notice that the large map of the United States (pp. 230-231) also gives this information.

The Weather

Weather and climate. In getting a world view of farmers and their work, you will read frequently about weather and climate. The word *weather* refers to the condition of the air at a particular time, as today's weather. *Climate,* on the other hand, refers to weather conditions in any one area over long periods of time, years instead of days.

Climate makes a difference. Weather and climate are of enormous importance to the farmer. What farmer is there who is not concerned about frost and heat, or rain and drought, or wind? What farmer does not watch for storm clouds rising in the sky?

The two pictures on the opposite page illustrate the difference that the amount of rainfall may make in ways of farming. The upper picture shows a place in Libya, in northern Africa (p. 390). There the land gets less than 10 inches of rainfall a year (pp. 372-373). The bottom picture shows a valley in Sumatra (pp. 386-387), where there is more than 80 inches of rainfall each year. In the dry land of Libya, a farmer raises wheat or barley and is fortunate if he gets more than a few bushels of grain in one season. In rainy Sumatra, farmers grow rice and can count on heavy yields of rice regularly. One farmer uses camels in his dusty fields. The other farmer uses water buffaloes, which may have to wade through water even when plowing.

If there were heavy rainfall in Libya, farmers there could do much the same kind of farming that is done in Sumatra. If there were enough water, rice would grow well in Libya. And if it were dry in Sumatra, undoubtedly farmers would plant some crop other than rice.

So, throughout the world, climate makes a difference to farmers. But it would not be true to say that the farmer *must* do anything because of the climate. Even if the climate is favorable, he does not need to plant rice or corn or any other crop, unless he chooses

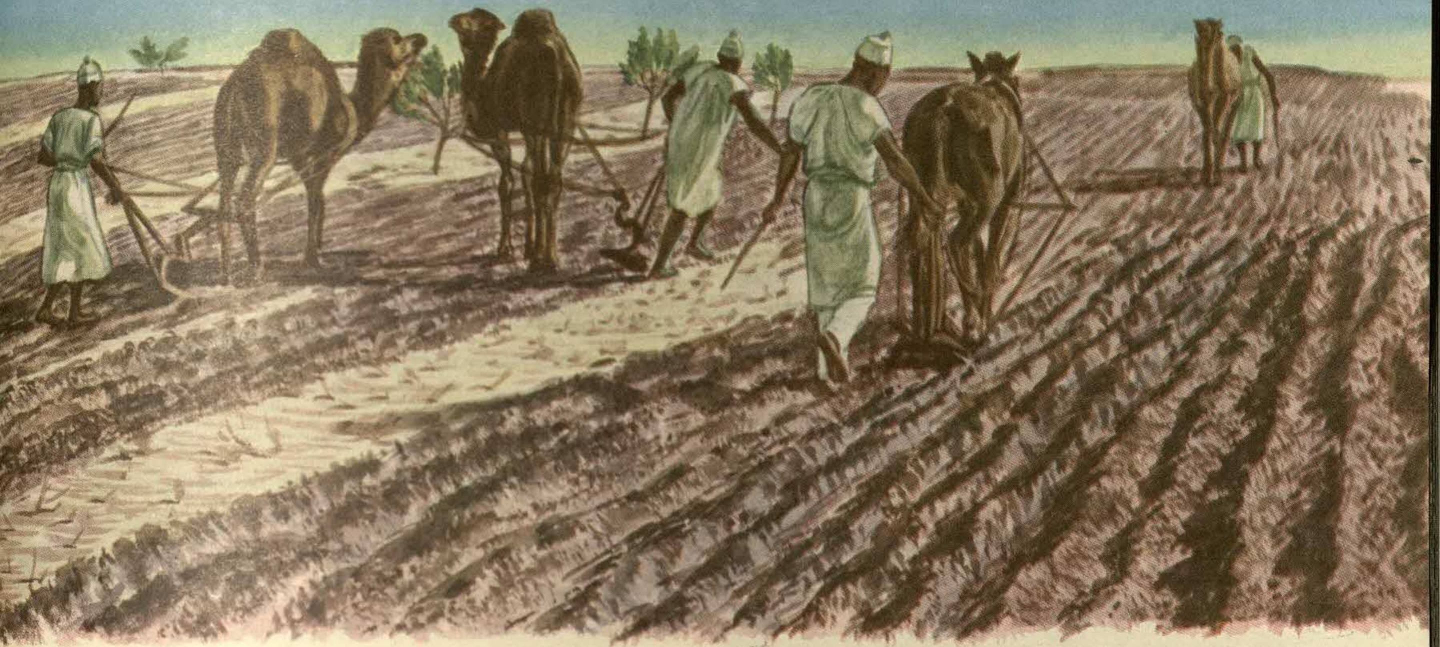
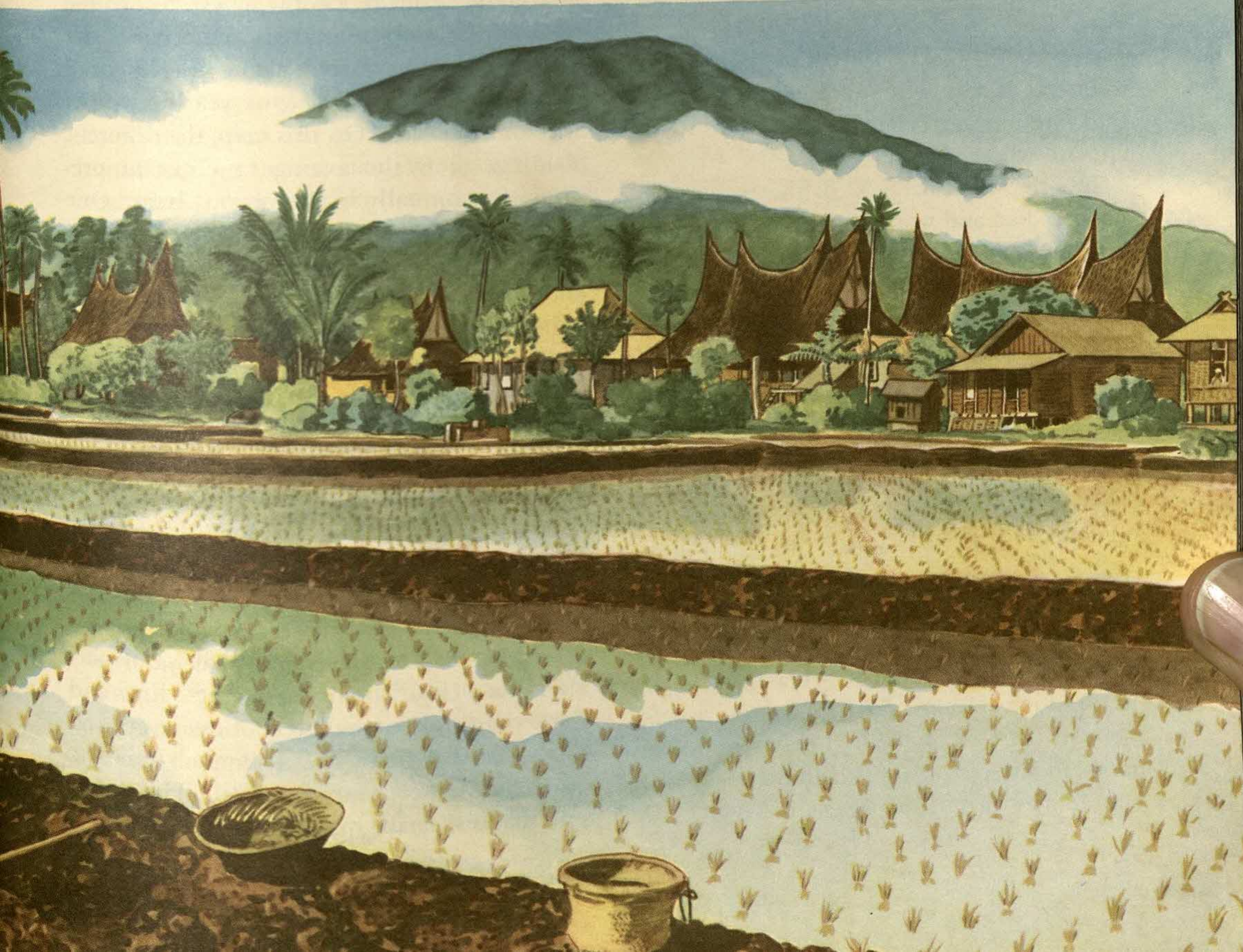


Figure 70. Farming in a dry land

From photo by Ewing Galloway

Figure 71. Farming in a rainy land

From photo by Gendreau



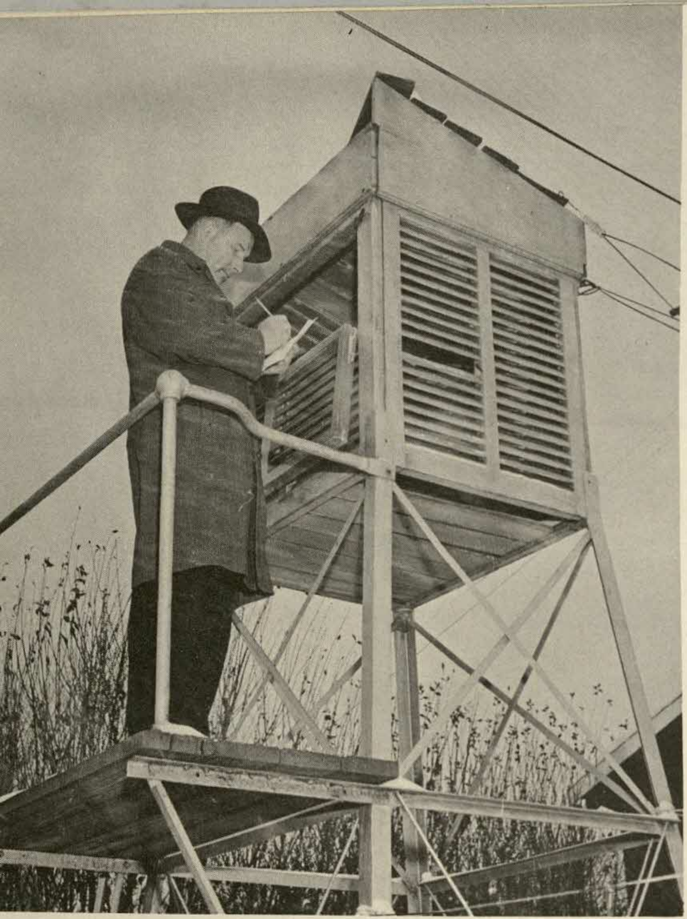


Figure 72. At a weather station *Photo by Sidney Latham*

to do so. In fact, many farmers work in ways that are not especially well suited to the climate where they live.

If a list were made of all the reasons why farmers live and work as they do, you would find that climate is only one item on the list. A complete explanation of why a farmer works as he does will include such varied things as his education, the customs of the country where he lives, the methods and tools inherited from the past, and the distance to market.

Weather records and weather maps. Special kinds of maps, called weather maps, tell us about rainfall, temperature, and other things concerned with the weather. These maps, like maps of land and sea, are useful tools in geography.

The story of modern weather maps begins at weather stations. There are more than 5000 of these in the United States, and many more in the rest of the world. The weather station shown on this page is in New Jersey. Every day, the man in the picture makes notes of the highest and lowest temperatures, amount of precipitation, wind direction, clearness, cloudiness, and so on. Any form of falling moisture is known as *precipitation*. Hail and snow are measured after they have melted.

Each day, the United States Weather Bureau puts these notes together with reports from other stations and prepares a map which shows what the weather is like in the entire country on that day. One of these weather maps may be published in the newspaper that you read.

A map of rainfall. Many kinds of maps might be made from the daily reports at weather stations. In our study, we will use frequently a map of rainfall, or precipitation (pp. 372-373). This map, too, is based on the daily reports at weather stations. Before the map could be made, people had to record the total rainfall for one year after another at the different weather stations. Then they figured what the *average annual,* or yearly, rainfall was for each area. On this map, the different shadings show the average amount of precipitation annually in the various areas. One kind of shading shows areas having from 20 to 40 inches of rainfall in one year, another shows areas having from 40 to 60 inches of rainfall in one year, and so on.

Other kinds of rainfall maps could be made, showing, for example, the average winter rainfall or the average summer rainfall. Maps of these kinds are helpful to us in our study of farming. The amount of rainfall in a particular season may be more important to a farmer than the total amount of rainfall in a year.

You have learned that a particular line on a map stands for a river and that a dot may stand for a city. When you see these lines and dots, you think immediately of the rivers and cities that they represent. It is much the same when you look at a rainfall map. The different shadings make you think of real things in the world—rain, hail, or snow, and the weather stations where, day by day, observers make a record of precipitation.

Maps of temperatures throughout the world. To understand the weather and how it affects the farmer, it is helpful, too, to know about temperature. A record of the temperature is made by weather observers day by day and year by year. Ordinarily, in the United States a record is made of the highest temperature and the lowest temperature each day. From these, the temperature halfway between is figured. For instance, the thermometer may show 60° at noon, and then drop to 40° at night. The *mean,* or middle, temperature is 50°.

The mean daily temperatures are then averaged in order to get the figure for the month. From the figures for the months, the figure for the year is obtained. And when the figure for one year is averaged with figures for other years, we have what is called the *average annual temperature.*

From the average annual temperatures, a temperature map can be made. But average annual temperatures may not give us the most useful information for our study of farming. You will find on pages 374-377 two temperature maps which will be helpful as you study about the world's farmers. One map shows average temperatures in January, the other in July. These two maps tell us more than would a single map of the average annual temperatures.

San Francisco, for example, has an average annual temperature of about 54°, which is nearly the same as that of Cincinnati, Ohio. Yet in January, the average temperature in San Francisco is a pleasant 50°, while in Cincinnati it is a chilly 32°. In July the average thermometer reading in San Francisco is only about 58°, while in Cincinnati it reaches more than 76°. The average annual temperature in each place is almost the same, but actually the weather in the two places is rather different. In fact, during each year, ordinarily, there are 175 days with killing frost at Cincinnati. In San Francisco there are only 25 days with frost in an average year. Clearly, in studying farming, it is more useful to know January and July temperatures than the average temperature for the year as a whole.

How to use the temperature maps. Whenever you use these, or any other maps, it is well to recall the suggestion on page 16—*look at the legend.* The legends on the temperature maps (pp. 374-377) answer three important questions.

1. What do the maps show? They show the average temperatures of various lands in January and July.

2. How are the temperatures described? The answer from the legend is: *Hot, Warm, Cool, Cold.*

3. What meaning does each of these words have, as used on these maps? In a land marked *Cold,* the average temperature is less than 32°. In a *Cool* land, the thermometer readings average between 32° and 50°, and so on with *Warm* and *Hot.*

These maps will be helpful to us in learning about weather at particular places in the world.

Let us take Bedford, for example, the community described in the first chapter. According to the temperature maps, a farmer near Bedford may expect cold winters, with average temperatures below freezing in January. Summers, on the other hand, will be hot. In Sumatra, shown in the picture at the bottom of page 65, farmers may expect the weather to be hot both in January and July, which means that it will be warm enough for crops to grow all through the year. The maps show that summers in Florida are hot, but winters in Florida are warm, not hot.

Seasons turned around. When you compare the two temperature maps (pp. 374-377), you discover that January is a colder month than July only in lands north of the equator. South of the equator, the seasons are reversed.

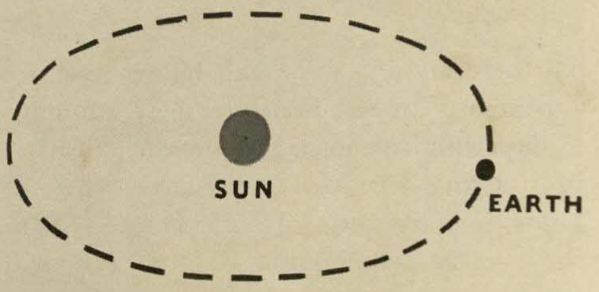


Figure 73. The path of the earth around the sun

July is a colder month than January. When the weather is freezing in most of the United States, it is hot in most of Argentina. Christmas Day in Argentina is a good day for swimming. There, summer vacations come in January. The middle of the school year comes in July.

It is one thing to know that seasons on the other side of the equator are opposite from ours. It is quite another thing to know why. There is no simple explanation, but the following facts may help you to understand the turned-around seasons.

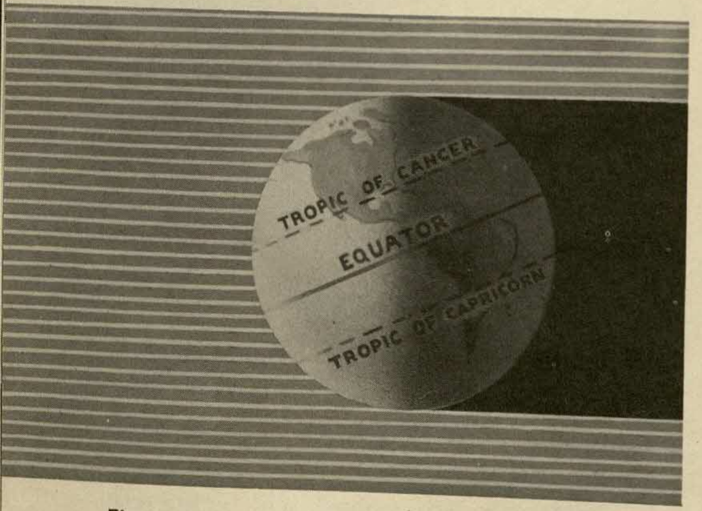


Figure 74. When it is summer in the United States, and winter in Argentina

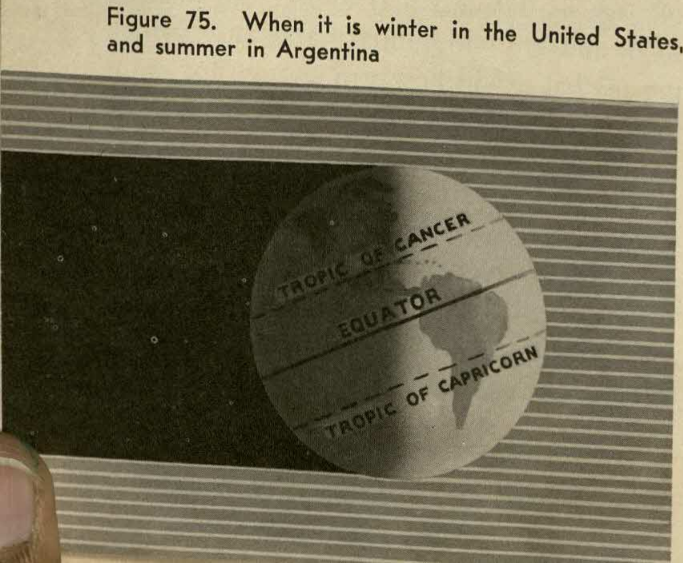


Figure 75. When it is winter in the United States, and summer in Argentina

Let us begin with the movements of the earth. You know, of course, that the earth rotates, or turns, on its axis once in every 24 hours. It is day when our side of the earth is turned toward the sun. It is night when our side of the earth is turned away from the sun.

The earth also moves in an almost circular path *around* the sun, as illustrated in Figure 73. Think of a boy who ties a spinning top to the end of a string and whirls it around his head. Then think of his head as the sun and the spinning top as the earth, and you have a rough idea of how the earth moves around the sun, and keeps on spinning at the same time. It takes a year for the earth to make each trip around the sun.

Now it happens that the earth is tilted, so that on part of this trip the northern lands are turned a little toward the sun, while the southern lands are turned a little away from it. This is shown in Figure 74. At another time the southern lands are turned a little toward the sun and the northern lands are turned a little away from it (Fig. 75).

When the northern lands are turned toward the sun, it is summer there, and winter in lands south of the equator. And when the southern lands are turned toward the sun, it is, of course, summer there, and winter in lands, such as the United States, north of the equator.

Probably you have noticed that the sun is higher in the sky in summer than in winter. This is connected, also, with the tilt of the earth and its trip around the sun. When our land is turned toward the sun, the sun of course is more nearly overhead than when our land is turned away from it.

Changing weather and the farmer. In learning about weather and the farmer, prob-

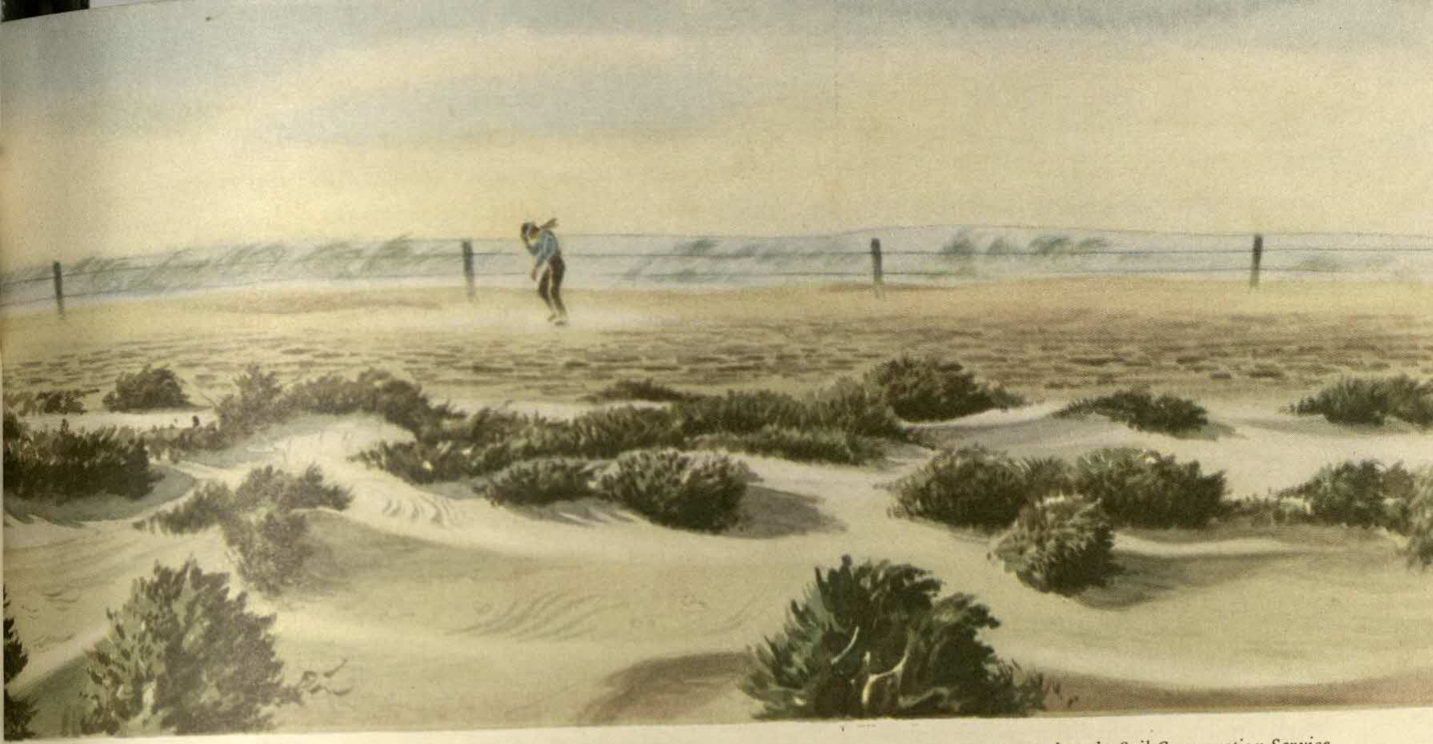


Figure 76. In a dry year

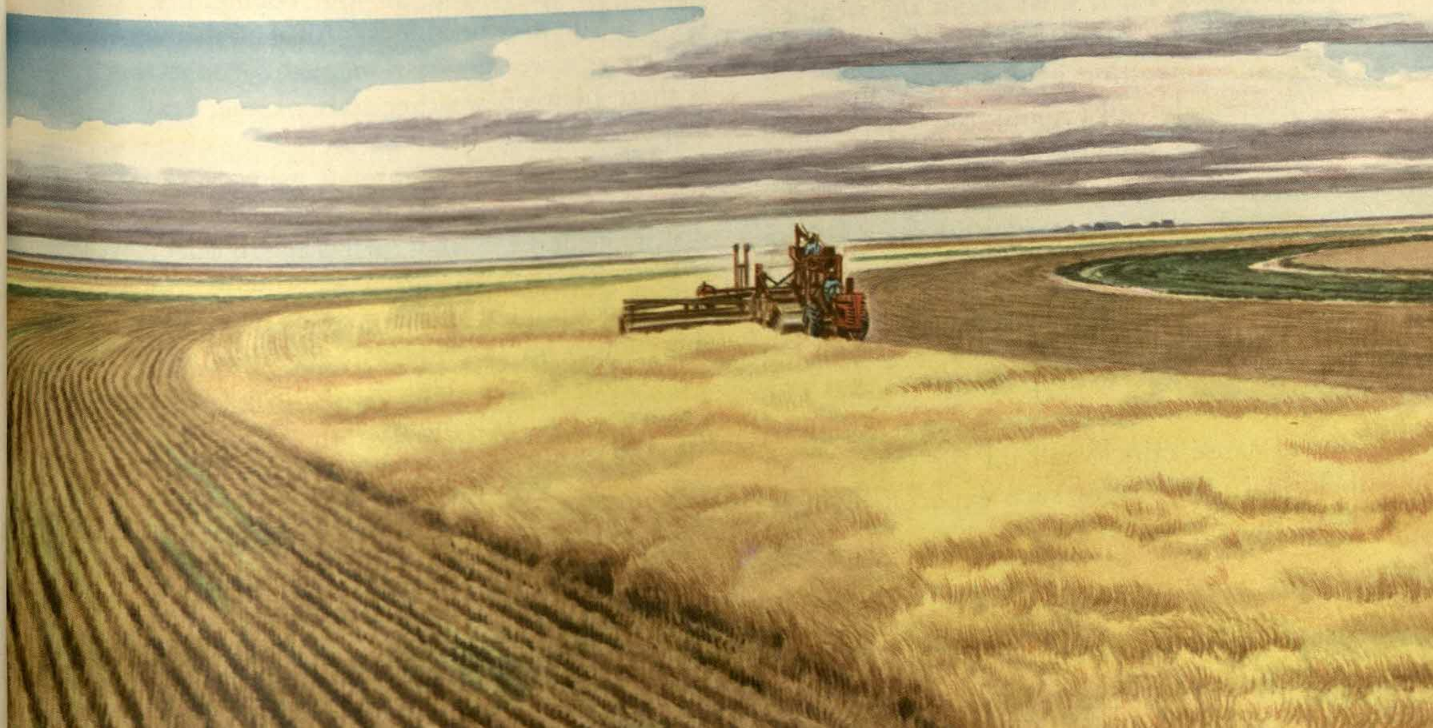
From photo by Soil Conservation Service

ably you have noticed that the word *average* has been used many times—average annual rainfall, average annual temperature, for example. The use of the word average suggests that the amount of rainfall or temperature varies from one year to the next. This average amount is a general description that may not fit any one year. Most farmers know this. The rainfall for one year may be greater, or less, than for another. No one can be sure. That is one of the farmers' big problems.

The two pictures on this page suggest how great was the difference between the weather in Oklahoma in 1936 and in 1948. The year 1936 was a year of drought and dust storms. Week after week the people looked for rain.

From photo by Soil Conservation Service

Figure 77. In a wet year



Almost none came. Day after day the sun shone brightly. The wheat stalks turned brown and died, long before there was any grain on them. The corn plants first changed to a sickly yellow; then they also died. The grass in the pastures stopped growing, and many cattle starved. The people must have wondered, "Shall we give up and move away? Or will good years come again?"

The year 1948 was one of the best on the plains of Oklahoma, for rainfall was abundant. Now crops were large, as suggested by Figure 77. But even in prosperous times, farmers face the problem of changing weather. What about next year? Will the dry years come again?

In many places in the world the weather is much less changeable than on the western plains of the United States. But everywhere there are some changes from day to day, from season to season, and from year to year.

What to do about the weather. Can farmers do anything about the weather, since it is so important to them? Long ago, as you have seen, men tamed wild animals and so gained control of a source of power and a supply of meat and hides. Farmers have shown that they have some control over the use of land. They can choose the kinds of crops to raise and decide which field is to be used for each crop. Scientists have learned how to improve many crops. Then what about the weather? Certainly men must have dreamed many times of controlling it, too.

"Everybody talks about the weather but nobody does anything about it." This old saying is no longer completely true. Scientists have made it rain or snow in their laboratories. And daring men have experimented on real clouds in the sky. The plane, part of which is shown in the picture (Fig. 78), has carried chemicals to drop on the clouds. The experimenters hoped that the chemicals would cause rain to fall on the thirsty land below. In some cases, such experiments have been successful. In Louisiana, not long ago, the owners of a sugar plantation sent a plane to sprinkle chemicals on the clouds over their land. Soon, heavy showers fell to the earth.

Of course, man did not make the clouds in the sky. The chemicals caused moisture to fall, but the moisture already was there—in the clouds. And in many cases men have tried to make it rain and have failed. In spite of these things, men actually are learning to do something about the weather.

If you stop to think about it, man's control of weather presents some unusual problems. Suppose that in one community a farmer decided to make it rain on the day a ball game was scheduled. Or suppose one farmer's grain is being harvested, needing dry weather, while another farmer's corn is withering for lack of moisture. Who would have the right to decide whether or not to make it rain? And who would be responsible if a flood were caused by too much rain-making?

So far there are no answers to these questions. But one thing is clear. When men learn of new powers, such as the power to make it rain, they must also learn how to control that power.

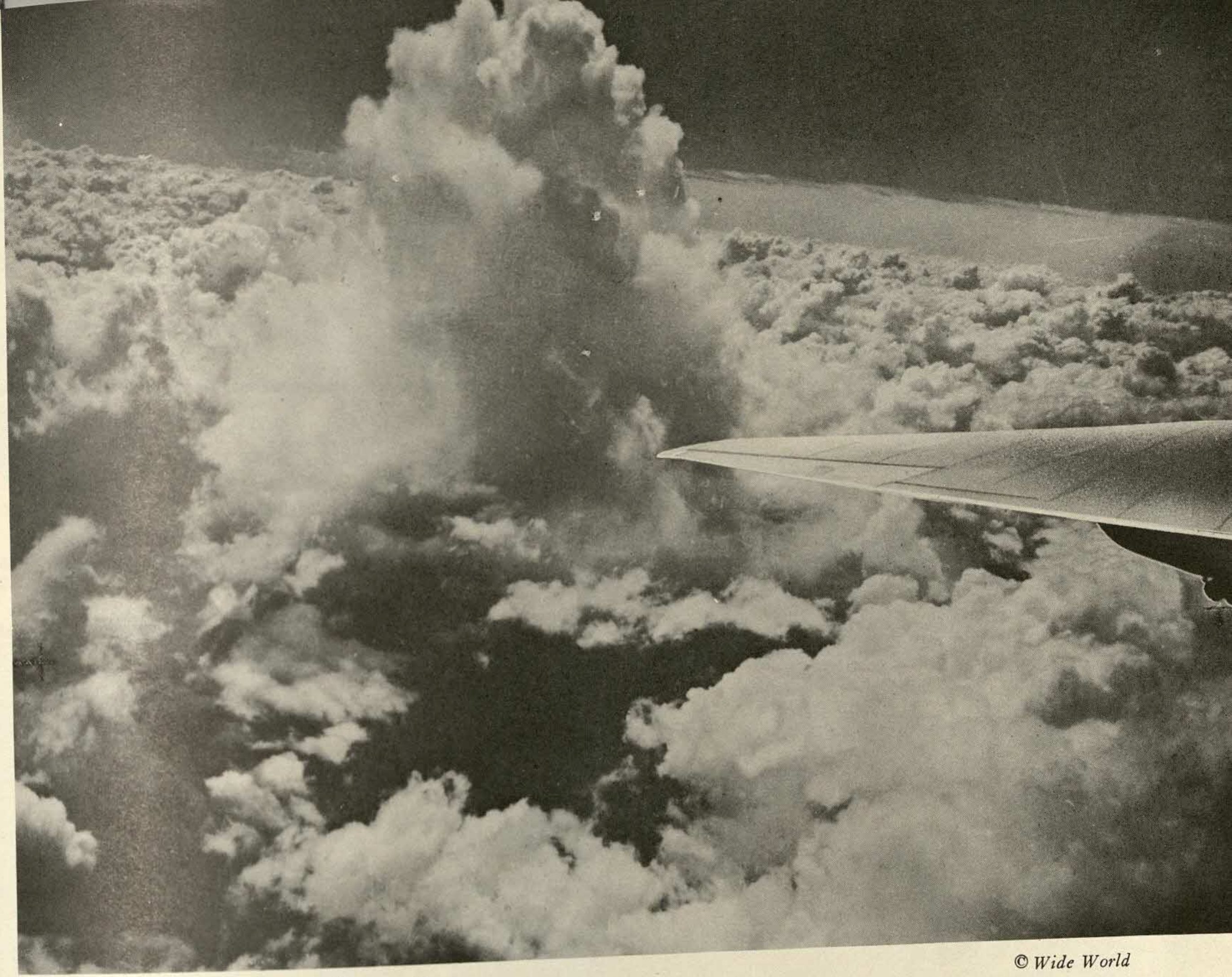
Helps in Learning

1. Find out whether or not there is a United States weather station in your community. If there is, you may be able to visit it. What work is done at a weather station? What connection is there between weather stations and weather maps?

2. According to the rainfall map, pages 372-373, which parts of the United States have more than 40 inches of rainfall each year? In what part is there less than 10 inches of rainfall? About how much rainfall is there where you live? Is this enough for farming without irrigation?

3. Turn to the January temperature map, pages 374-375. Is January hot, warm, cool, or cold where you live? What are summers like at your home, according to the July map, pages 376-377?

4. Suppose you are planning a year's trip



© *Wide World*

Figure 78. Trying to change the weather

around the world, spending: January in Brazil; February in South Africa; March and April in the Belgian Congo; May in Egypt; June, July and August in Europe; September in India; October and November in Malaya; December in Australia; and New Year's Day in Japan. Considering the season you will be there, in which of these countries would you probably need summer clothes? In which would you need winter clothes?

5. What difference would it make to the farmers in your state if, during the growing season next year, there were only half as much rainfall as this year? What if there were twice as much next year? In what ways would these changes in amount of rainfall affect people living in the cities of your state? Tell how.

6. Choose some one country outside the United States which you can see clearly on the various atlas maps. Then write what you can learn about that country by reading the land forms map (pp. 380-381), the rainfall map (pp. 372-373), and the temperature maps (pp. 374-377). Do the maps suggest that the country you selected is a good place for farming? Why, or why not?

7. If the time ever comes that man has direct control over the weather, a great question will be, "Who shall choose the weather for a community?" Why might it seem wise for farmers to decide about the weather? Why might it be wise for the people as a whole to decide? Give examples to help explain your answer.

8. *A class project.* Make a farm calendar for your state, using twelve pictures, one for each month of the year. Each picture should be drawn to show some kind of farm work which fits that time of year. On the cover of the calendar, write a paragraph under this title: *Work and Weather Go Together.*

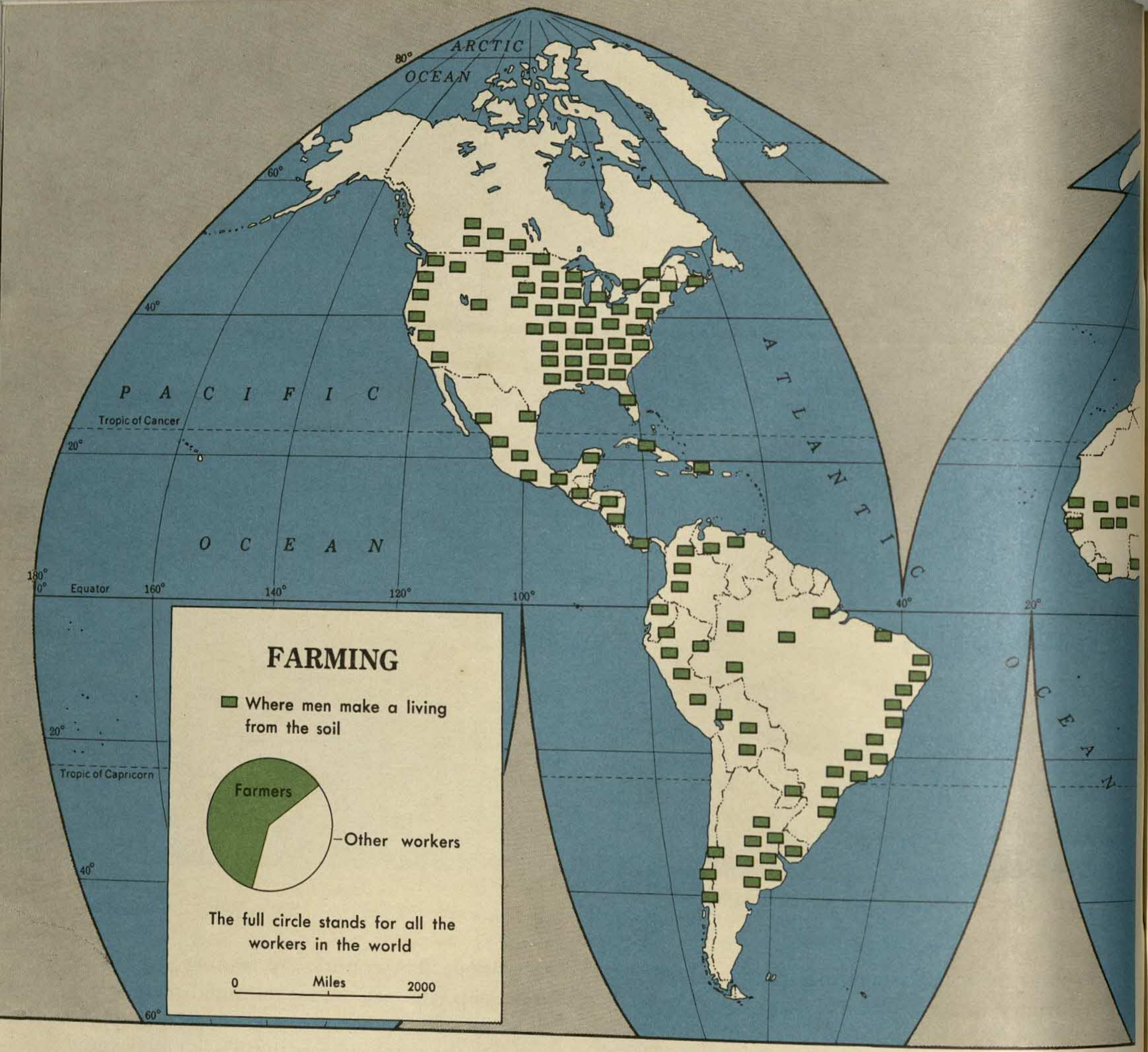
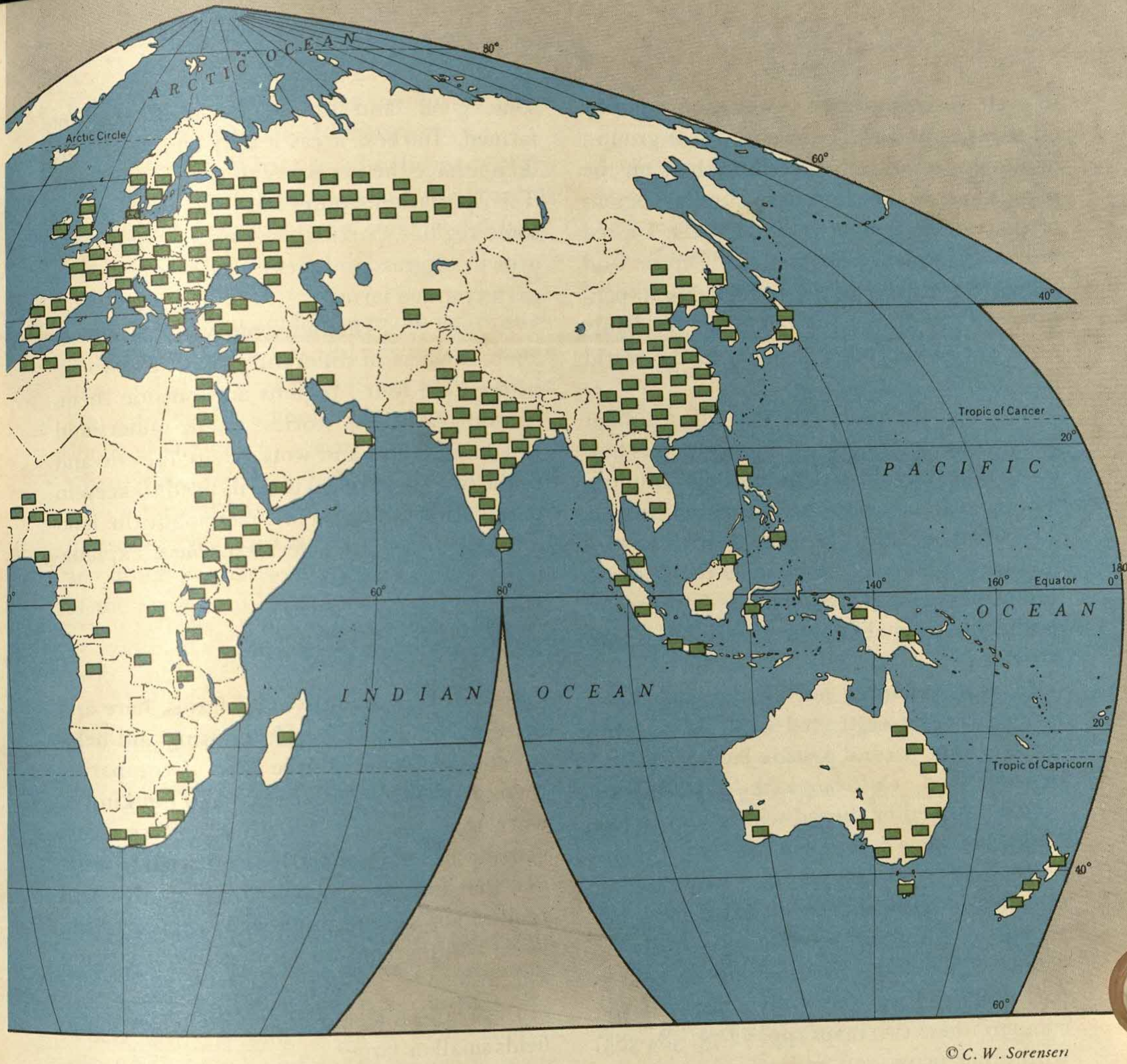


Figure 79

Farmers of Today

Many millions. The people who live in cities often see hundreds or thousands of people at one time on the subway at the rush hour, on the street, or at a ball game. When they go out into the country, they usually see only a few people at one time. Because of this, they may think that in general there are fewer farmers than city workers. It is true that in the United States, and in some other countries, city workers outnumber the farmers. But the graph on the map above shows that, in the world as a whole, farm workers far outnumber all other workers. When we speak of the farmers of today, we are referring



© C. W. Sorensen

to considerably more than half of all the workers in the world.

Where they live. The map above shows where most of the farmers live, from Canada to Australia, from Japan to Argentina. It is interesting to compare this map with the map which shows hunting, trapping, fishing (pp. 28-29) and the map which shows ranching and herding (pp. 40-41). On the map above, we discover that some signs for farming are placed almost exactly where, on other maps, we found signs for other kinds of work. There are signs for both farming and fishing along the coasts of the United States. Both ranching and farming are shown in parts of western United States. These are not mistakes. Within a single county in California, for example, there are farmers, ranchers, and fishermen, as well as some miners and forest workers. We have learned that these five groups of people use five different kinds of natural resources. We see now that in some parts of the world, these different kinds of work may go on, almost side by side, in the same area.

The "big four." There are some farmers in each of the continents shown on the map on pages 72 and 73. Four clusters, or groups, of squares stand out from the others on the map, showing the chief four farming regions of the world. One of these is in the United States. Another is in western Europe and Russia. A third is in the India-Pakistan peninsula. The fourth is in China. Probably nine out of every ten farmers in the world live in these four regions.

The map on pages 384-385 tells a similar story. The square in each country shows how much cultivated land there is in that country. The same four regions stand out on this map. This map suggests that only a small part of the world's land is cultivated. Africa, for example, has little cultivated land. In the world as a whole, only about one acre in ten is used for crops.

In most instances, not all the land that a farmer owns is cultivated land. Most farms include some natural pasture land, woodland, or waste land. *Cultivated land* is land that is actually stirred or turned with a stick, a hoe, a plow, or some other farm tool.

Reasons. You may wonder why most of the world's farmers and cultivated lands are grouped in four areas. There is really no simple explanation. A difference in soils is part of the answer, but only a part. If you compare these two maps (pp. 72-73, 384-385) with other maps, you will see other reasons.

The temperature maps, pages 374-377, suggest that most of the lands north of the 60th parallel are cold or cool most of the time. In such lands you would not expect to find much land under cultivation. The land-forms map, pages 380-381, suggests why certain other areas have few farms, for in general mountainous lands are not well suited to farming. The rainfall map on pages 372-373 suggests why most of northern Africa, for example, has only a little cultivated land and few farmers.

This, of course, does not explain fully why these four areas are the most important farming regions of the world. There is some good land in the world that is not farmed. In these areas it may be that people do not have the necessary tools or knowledge. Transportation routes may be lacking. In some regions, particularly in the tropics, the growth of grass and trees may be so dense as to discourage farming.

As you read further, you will find stories about farmers in different parts of the world, in the "big four" regions and outside them. As you read these stories, try to understand why farmers live and work where they do and in the ways they do. You will need to keep in mind, always, that no one fact about the land or the people can give a complete explanation.

A Check List

As you look at individual farms, here and there in the world, it is interesting and helpful to have some simple way of comparing them, particularly with regard to the kind of work that goes on. For this purpose many geographers use a check list somewhat like the one that follows. Each item on the list will remind you to look for that particular thing when reading about a farm or when visiting a farm.

1. *Size.* How big is the farm? Are the fields small or large?

2. *Farmstead.* Are there many buildings or few? What are the buildings used for? Does the house have modern improvements, such as electricity and plumbing? Are the farmsteads of the community grouped together in a village or town, or do they stand by themselves in the open country?

3. *Ownership.* Does the farmer own the land which he works? Does he rent it? Does he work for wages?

4. *Crops and livestock.* What crops does the farmer grow on his farm? What livestock does he raise?

5. *Methods.* Is most of the work done by hand or with machines? Does the family

help with the work? Does the farmer try to use modern methods of farming?

6. *Market.* What use is finally made of the crops and livestock produced on the farm? Is it a subsistence farm or a commercial farm, or, in part, both?

Of course, you are interested in many other things about farm life and work than the six items listed. For example, you may want to know about the schools, churches, hospitals, and government in a farm community. So, when you compare a farm in your own state with a farm perhaps in India, you will want to use the check list, and then go on to make any other comparisons you can about the life of the farmers and their families.

Helps in Learning

1. Canada is somewhat larger than the United States. Yet Canada has much less farm land. How do the temperature maps on pages 374-377 help to explain this difference?

2. Australia is almost the same size as the United States, yet Australia has much less farm land. Use the rainfall map, pages 372-373, to help explain this difference.

3. Most of China's farm lands are in the eastern part of the country. Two reasons for this are shown by the maps on pages 386-387 and pages 372-373. What are these reasons?

4. Would you expect most farmers in the United States to have farms of about the same size? Why, or why not? Do you think they work in much the same way? Check your answers as you read the following stories.

Farmers of North America—in The United States

In the Corn Belt

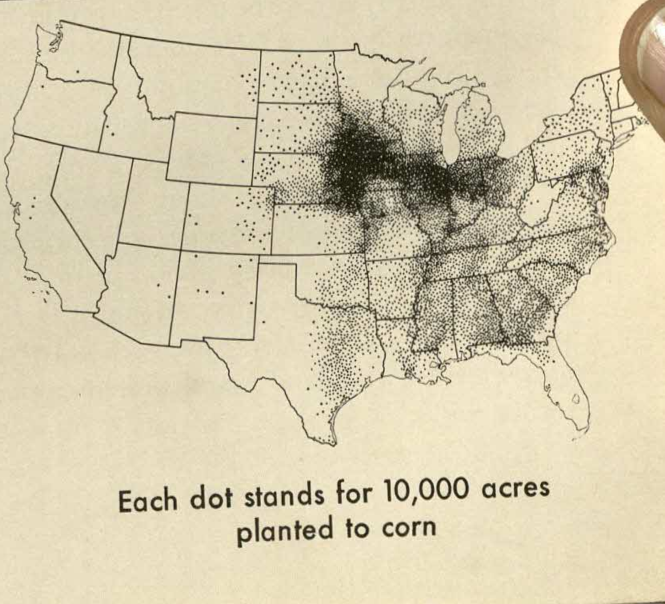
Where corn is king. The map at the right and the pictures on pages 76 and 77 tell about the corn belt in north central United States. There corn is king. There more land is planted to corn, and more money is made from corn than from any other crop, although of course there are other kinds of farms and other crops.

No sharp line divides the corn belt from the rest of the country. As is shown on the map, some corn is grown in every section of the United States. But from Ohio to Nebraska the dots are so closely spaced that the map is almost solid black. In general, this dark area is the corn belt.

In most of the corn belt, the land is level, stretching on for mile after mile. The fields are big and regular in shape. Each farmstead has a few trees, and a narrow road leading to a highway. From an airplane these highways look like white lines drawn by a giant who had used a ruler many miles long.

A corn-belt farm. A 160-acre farm in central Illinois is a good example of many thousands of farms in the corn belt. The farmer

Figure 80. Where corn is grown *U. S. D. A.*



Each dot stands for 10,000 acres planted to corn

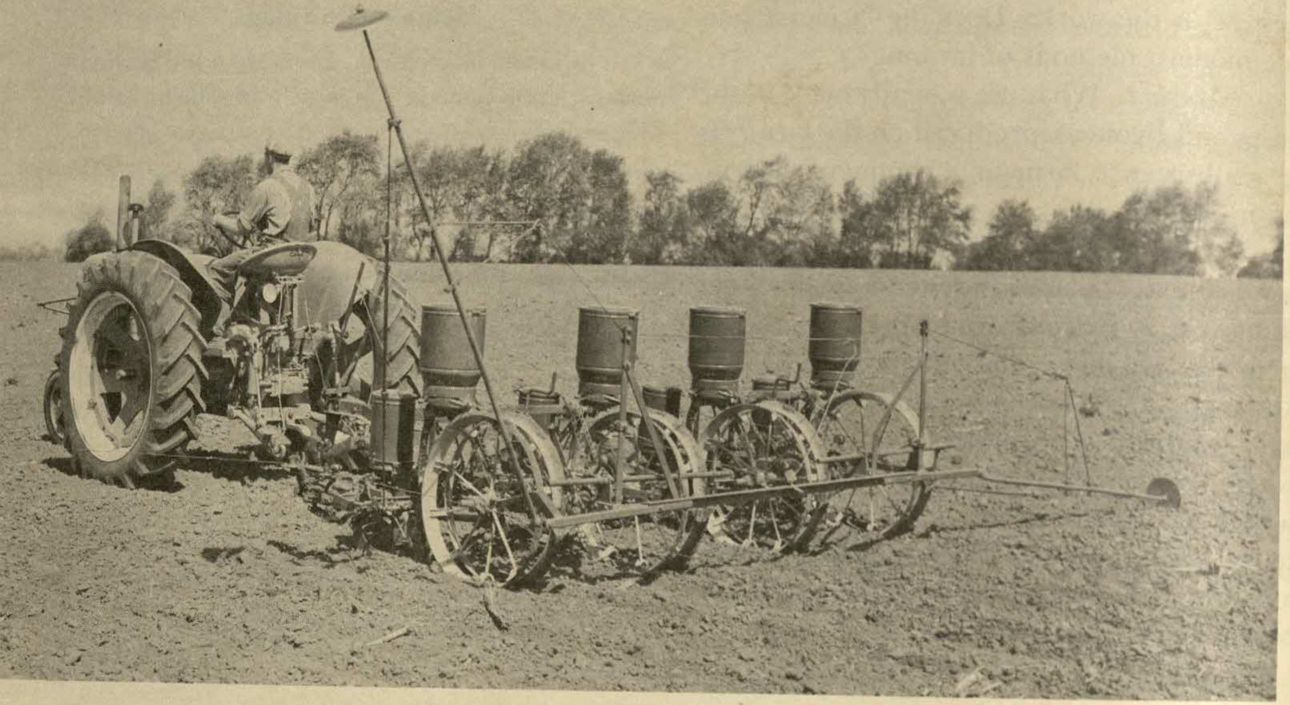


Figure 81. Corn planting time *Courtesy J. I. Case Co.*

rents the land, paying a share of the crop for the right to use the land. Many other farmers pay their rent in cash, and, of course, many farmers own the land which they work.

The house on this farm is protected from the wind by a grove of trees like the one in the picture above. In addition to the house there is a barn for horses and cattle, a corn crib, chicken coop, a hog shed, a garage, and a building where machinery is kept when not in use.

Each year the farmer plants about 100 acres to corn in a few big fields. On the rest of the land he usually has soybeans, oats, or clover. He rotates crops in order to benefit the soil. In one field there may be oats one year, clover the next, and corn the next. Clover improves the soil, while corn tends to wear it out.

May is corn-planting time. Fortunately there is a tractor on this farm, so the corn can be planted within a short period of time, as soon as the weather is right. As shown in the picture above, four rows can be planted at once. Clearly this land is well suited to tractor farming.

An iron bar reaches out from the side of the corn-planting machine and drags on the ground. This helps the farmer to plant the corn in straight rows, for the bar makes a mark which he can follow as a guide on the return trip.

In June the farmers are in the field almost every day cultivating corn, except when rain makes the ground too wet. In July the oats must be harvested, and in September or October, the soybeans. The corn harvest usually follows the first frosty days of autumn. Farmers try to complete it before winter snows cover the ground.

Once, in harvesting corn, men walked through the fields, breaking the corn ears from the stalks and tossing them into wagons which kept moving alongside. Now, most farmers in the corn belt use corn-husking machines, pulled by tractors.

Not many years ago, the work on this corn-belt farm required two hired men most of the year. Now, the farmer does all the farm work alone, with the help of tractor-drawn machinery. His wife and children care for the chickens, do the gardening, and help with other chores.

What becomes of the corn? The farmer sells some of it but feeds a large part of it to cattle and hogs, as shown in the picture below. These are young cattle, brought from the ranches of the West. So many hogs and cattle are fattened in the corn belt that it might well be called the hog belt or the meat belt. In the country as a whole, more than 80 out of every 100 bushels of corn are fed to livestock.

Some corn, then, leaves the corn-belt farm in the form of grain. Some corn leaves the farm as meat. In either case a truck carries it. Paved roads lead from this particular farm to a small market town only three miles away and to the county seat some 15 miles away. Good roads have helped much in making the corn belt a region of commercial farming.

Every few days either the farmer or his wife takes the car and goes shopping "in town," as they say. They store surplus meat and vegetables in a frozen-food locker which they have rented in town. The school bus takes their children to school in town. Like the farmer in Bedford (pp. 2-4), this corn-belt farmer is an active and important member of his community.

The Dairy Lands

Dairy farming. The two pictures on page 78 are familiar scenes on the dairy farms of our country—big barns, silos, herds of dairy cows, hayfields. The upper picture was taken in northern Illinois, the lower picture in Vermont. As the map on page 78 shows, most of the dairy farms are in a belt reaching from Minnesota to the Atlantic. The dairy belt, then, is north and northeast of the corn belt (map, p. 75).

The map shows, too, that there are many dairy farms outside the dairy belt. Each dot

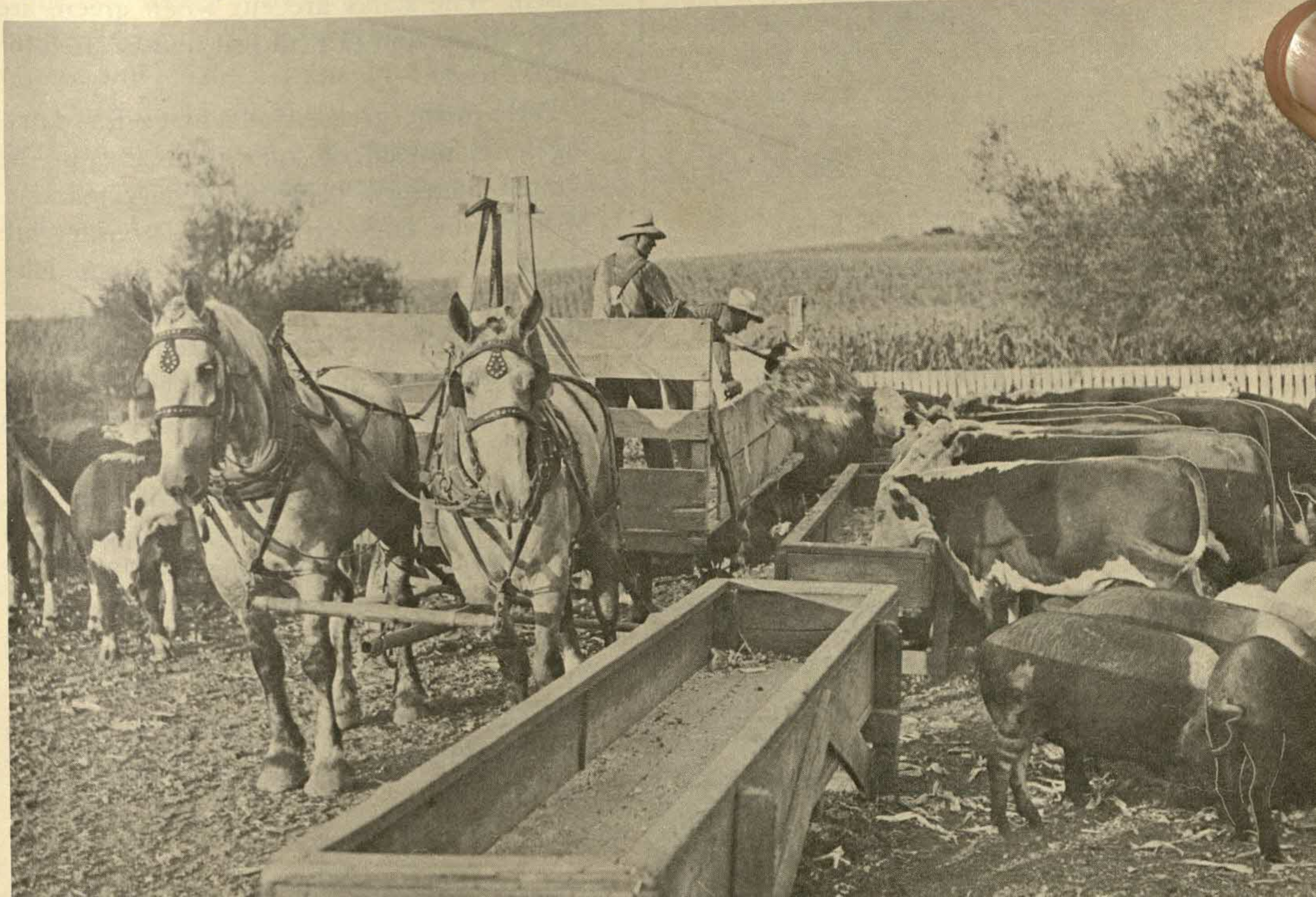


Figure 82. Feeding time

Arthur Rothstein

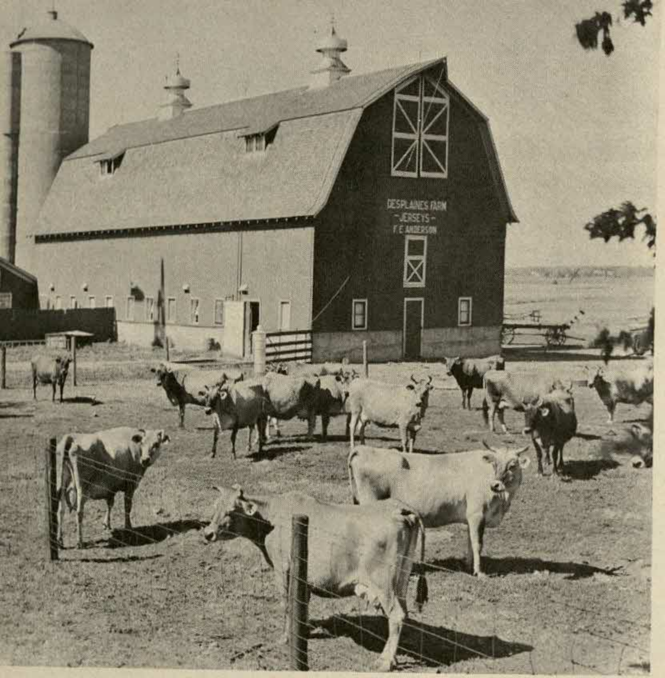
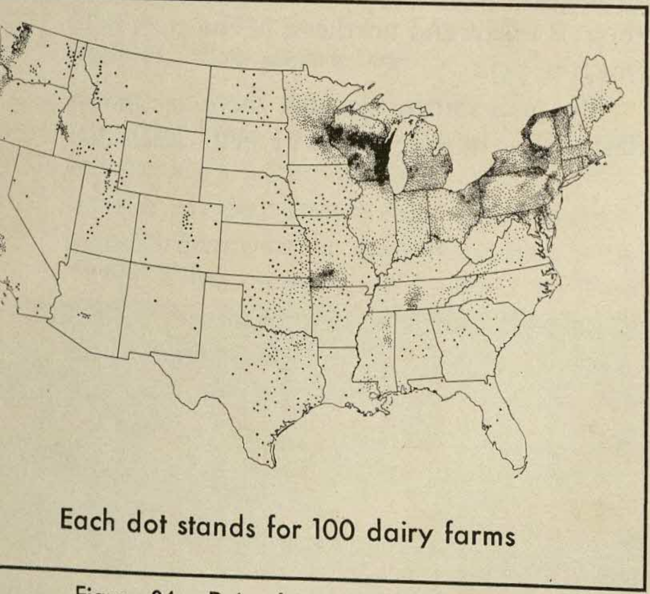


Figure 83. On a dairy farm ©*J. C. Allen*



Each dot stands for 100 dairy farms

Figure 84. Dairy farms *Bureau of the Census*

Figure 85. Raking hay © *Ewing Galloway*

on the map stands for 100 dairy farms. There are some dots in every state, including the corn-belt states. Furthermore, not every farm in the area described as the dairy belt is a dairy farm. There are, also, fruit farms, vegetable farms, and even some tobacco farms within the dairy belt. Nevertheless, dairying is the most important kind of farming in the area as a whole, and this is by far the outstanding dairy section of the United States.

Advantages and disadvantages. In some ways the dairy belt would seem to be a poor place for farming. Much of the land is stony. In many places the soil is sandy or shallow. There are many hills and swamps. Summers are too short and cool for corn to grow well. Winters are long and cold.

Yet one also may find advantages in these lands, particularly for dairying. When summers are not extremely hot, cows give more milk; and the milk may be handled more easily, without spoiling. Though the summer is short, it is long enough for crops of hay, oats, and barley. Corn will not ripen usually in this cool, short summer, but much corn is raised. The stalks are cut when green, are chopped up, and put into silos to be used for winter feed.

Perhaps the greatest advantage for dairying here, instead of somewhere else in the United States, is nearness to city markets. Most of the large cities in the country are either in or near the dairy belt. In the dairy lands as a whole, four out of every five people live in the city. What a wonderful market!

Dairy farms. You will recall the dairy farm in the Bedford community (pp. 2-4). This farm is like many farms in the dairy belt. Most of the farmers own the land they use. The average farm contains little more than 100 acres, which is somewhat less than the average farm in the corn belt. It is common to find that half of the land is in pasture and woodland. In the small fields on the rest of the land, the farmer grows hay, various grains, and corn to put in the silo. Most of the crops are fed to the dairy cows, yet most farmers must also buy some feed for their cows.

Dairy farmers invest much money in buildings and equipment. A barn, like the one in Figure 83, must be big, in order to shelter all the cattle and a supply of feed. Hay may be stored on the second floor of the barn. It is hoisted up and into the barn through the big doors near the roof.

The farmer's chief income is from selling milk and cream. He may also sell a few hogs, chickens, eggs, or perhaps a little surplus grain. Some milk or cream is made into butter or cheese. Some goes directly to the cities.

A day's work. Taking care of a dairy farm requires much work and hard work. The story of a typical day on a farm in Vermont makes this very clear.

It was the first of March. The farmer was up at 4:30 in the morning, as he is almost every day in the year. He started a fire in the kitchen stove, then walked out across the frozen snow to the barn. The cows were lying down, but got up as he switched on the electric lights. In a few minutes the milking machine was ready. By seven o'clock it was bright daylight, the fourteen cows had been milked and fed, and it was time for breakfast.

At eight o'clock a truck stopped at the farm, and the cans of milk were on their way to market. Then the farmer cleaned the barn and scattered straw and sawdust in the stalls. During the rest of the forenoon he was busy hauling manure on a sled to the fields.

After the noon meal, he spent more than two hours cutting wood for the furnace in his house and the kitchen stove. Then he cleaned the barn again, the second time in one day. There were other chores, too. The milk cans had to be washed, the calves and chickens fed, and the eggs gathered either by the farmer or by other members of his family.

The evening meal was at five o'clock. Soon afterwards it was time to feed and milk the cows again. Not until seven o'clock was the barn closed up. It had been a long day.

Except for Sundays, there are few easier days for this Vermont dairy farmer at any time of the year. At other seasons there is field work, fences must be fixed, and so on. Even on Sunday the cows must be milked and fed, the barn must be cleaned, and other chores must be done.

In the Wheat Lands

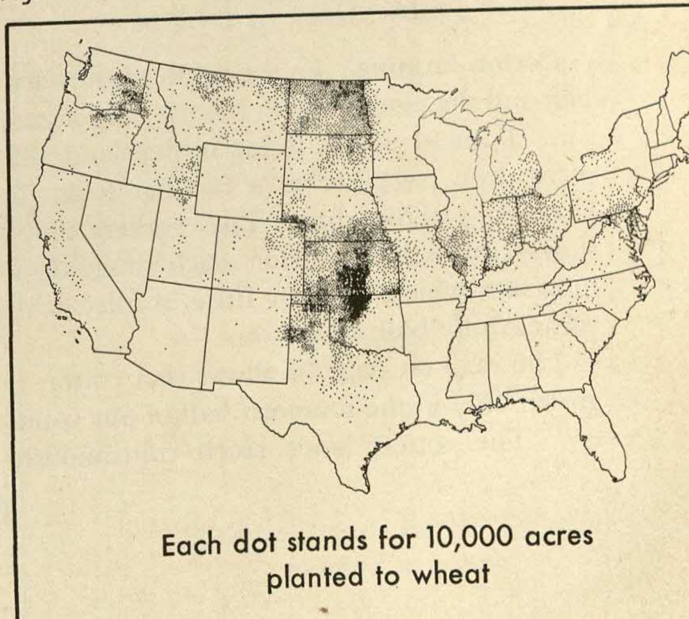
The wheat farmers. The map below shows where wheat is grown. There is a sprinkling of dots almost from coast to coast. Most of the dots, however, are grouped in the middle and northern parts of the country. Thus the area from Oklahoma to North Dakota has come to be known as the land of the wheat farmers.

In the Dakotas, and in near-by Minnesota and Montana, winters are so cold that nearly all the wheat farmers grow spring wheat. This is planted in the spring and harvested in the summer following. Elsewhere most of the wheat is winter wheat, which, as you may know, is planted in the autumn. The top of the plant may die during the winter, but the roots stay alive. Winter wheat also ripens in the first summer following its planting.

The work of the wheat farmer is well illustrated by several pictures which you have already seen. The top picture on page 57 shows how the ground may be prepared for seed.

Figure 86. Where wheat is grown

U.S.D.A.



Each dot stands for 10,000 acres planted to wheat

Some other farmers use a disc instead of a plow. The disc does not cut so deeply into the ground as the plow does, but it is believed that on some fields this shallow cultivation is better.

Nearly all grain is planted with a machine called a drill, shown on page 60. Then it is harvested either with a binder or with a combine. One kind of combine is shown at the bottom of page 57. Wheat and other small grains, such as oats, rye and barley, ordinarily do not require cultivation from the time they are planted until harvest time. Most wheat farms are large, and power machinery can be used to advantage.

Many wheat farmers are known as one-crop farmers, that is, they depend almost entirely on one crop—wheat. In general little of their land is used for other crops or for pasture. If the wheat crop fails, they have lost most of their year's work. And, as the two pictures on page 69 show, there are both good years and bad years in the wheat lands.

The wheat farmer always looks anxiously toward the sky when summer clouds rise and his crop is not yet harvested. Too much rain near harvest time may spoil the grain. A strong wind may bend the slender stalks to the ground, or a hailstorm may flatten the crop entirely. There is always the threat of drought. So the wheat farmers, like all other farmers, have advantages and problems.

In the Land of Cotton

Cotton farming. To the south of the corn belt and the land of wheat lies the land of cotton. To most people living in that land, the picture on page 81 has a familiar look. It is cotton-picking time. The workers move slowly through the fields, each dragging a long sack which, little by little, is filled with white, fluffy bolls of cotton.

The map on page 81 shows that cotton is grown only in the southern half of our country. The cotton lands reach continuously from North Carolina to Texas, with additional "islands" of cotton production in New Mexico, Arizona, and California. Little cotton is grown in Florida, largely because the soil is not right and there is too much rain in autumn during the picking season. In the northern states the growing season is not long enough for cotton.

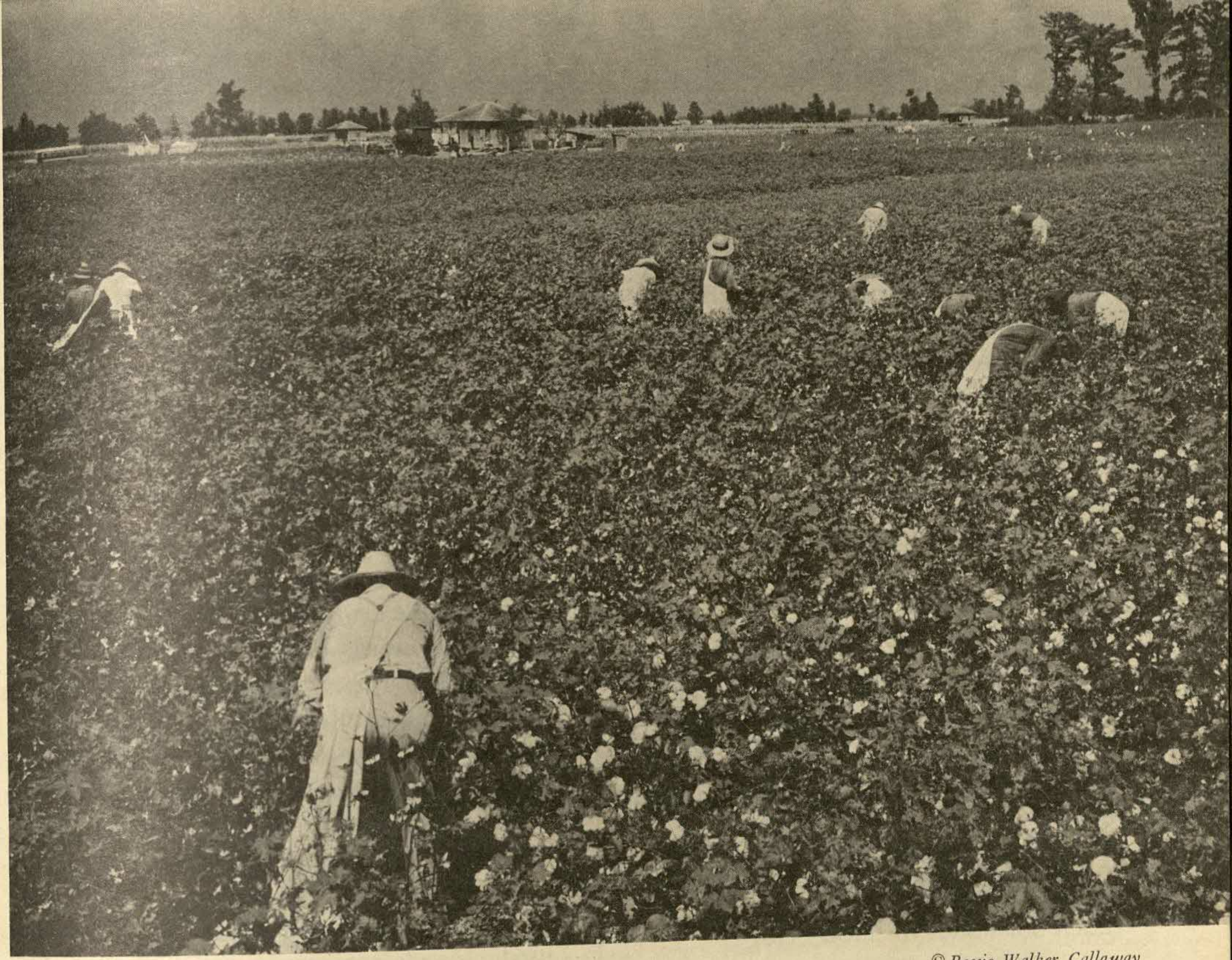
Farms in the cotton belt are less than 75 acres in size, on the average. About half of the cultivated land is planted to cotton. Next in importance is corn, used as food by people and as feed for livestock. On most farms there is some pasture land and woodland.

In the cotton belt, cotton, of course, is the chief *money crop*, that is, a crop grown for sale rather than for use on the farm. It is also the chief money crop of the entire United States. The value of the country's corn crop is greater than the value of the cotton crop, but most of the corn is fed to livestock and is not marketed as grain.

Past and present. Farm life and work in the land of cotton is rather different from that in most of the rest of the country. The history of the area helps us understand why.

If we went back a hundred years, we would find many large plantations in the South, also many small farms. On most plantations and on some farms, there were Negro slaves. Then came the War between the States, and the slaves were freed. A period of change and unrest followed. Many lands in the South had been battlefields. Many homes had been destroyed. Many men, landowners and workers alike, had been injured or killed during the war. For a time farm life was upset and badly disorganized. The owner of a small farm could go on somewhat as before the war. But it was not possible for a plantation owner to care for all his land himself.

Little by little a new kind of farming developed. Plantation owners divided their lands into small farms of a size that one family could care for. The men who worked these farms were not paid wages. The owner



© *Bessie Walker Callaway*

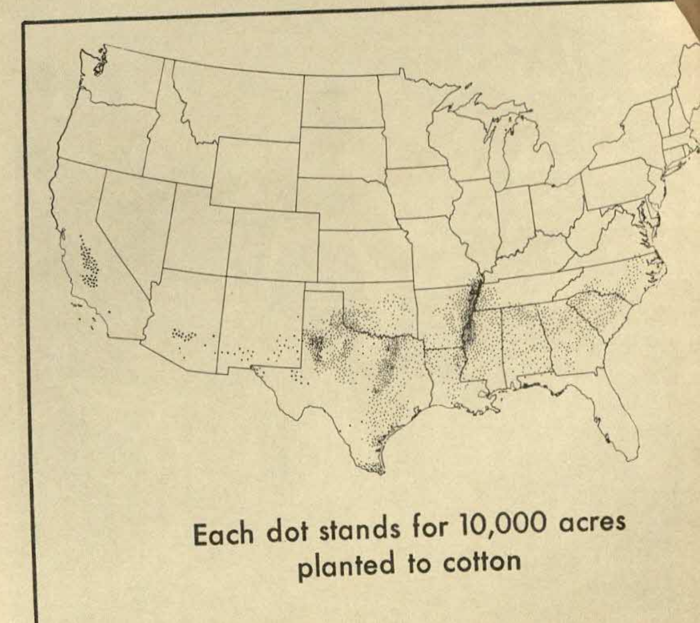
Figure 87. On a big cotton farm

supplied the land, the house, the seed, the tools, and the work animals. The worker, perhaps a former slave, supplied only his labor. After the harvest, the two divided the crop, each taking a share. In this kind of farming, the worker is called a *sharecropper*.

Today there still are some farmers in the land of cotton who own and work their own farms. But renters, either Negro or white, far outnumber them. A few renters pay a fixed sum and then get all the crop. Some renters furnish their own tools and work animals and give part of the crop for the use of the land.

But about half of all the cotton farmers are sharecroppers who have no tools or work animals. They can supply only their labor. Some do not plant gardens or keep even a few chickens. Many are in debt from one harvest to the next. Most of them move, time after time, from one farm to another, always in search of a better situation. This frequent moving helps to explain why some sharecroppers do little to improve the houses in

Figure 88. Where cotton is grown *Bureau of the Census*



Each dot stands for 10,000 acres planted to cotton which they live or the land which they farm.

Making progress. Work in the cotton fields is familiar to most of us. The land is plowed, perhaps in March, and the seed is planted in April. A month or so later, it is cotton-chopping time. Men, women, and children go through the fields with hoes, thinning the rows of cotton so that only the right number of plants are left. Then the fields must be cultivated, perhaps every week for two months. Finally it is picking time as shown in the picture on page 81. This work may last until Christmas, for not all the cotton ripens at once. Since most cotton is sold as soon as it is picked, few buildings are needed on a cotton farm.

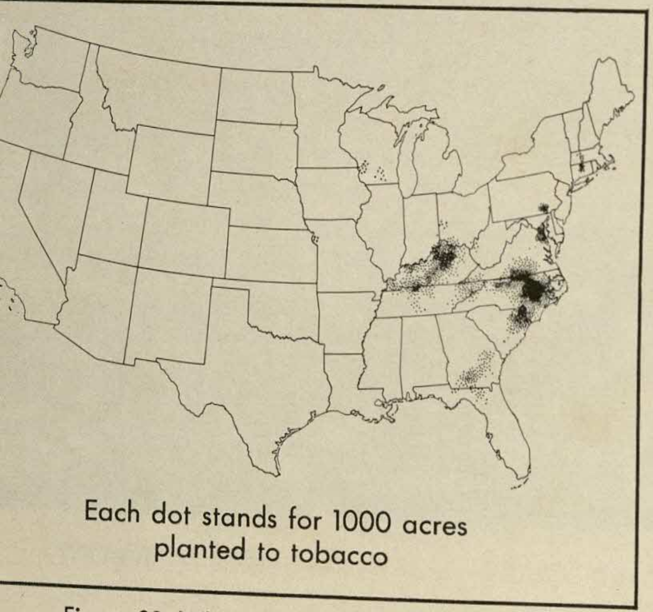
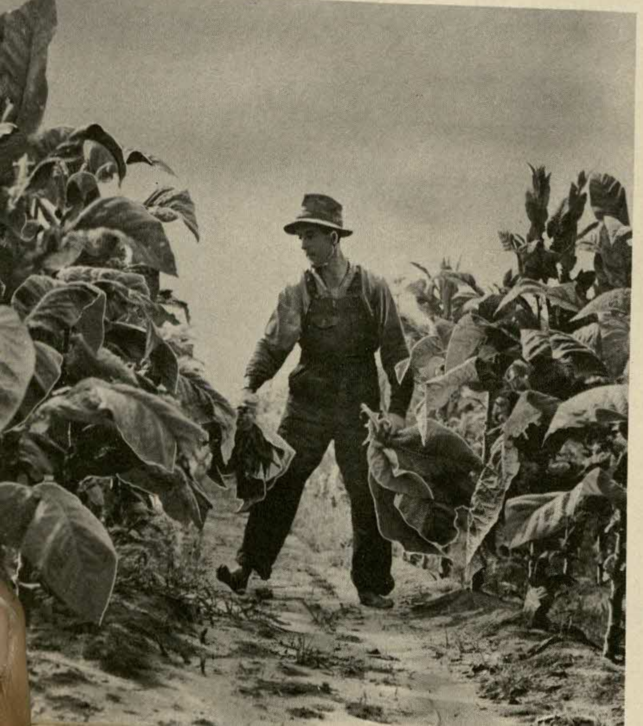


Figure 89. Where tobacco is grown *Bureau of the Census*

Figure 90. Priming tobacco
Courtesy North Carolina Dept. of Conservation and Development



As you can see, an enormous amount of work has to be done in the cotton fields. For this work, a few cotton farmers are using new labor-saving machinery. One new machine is a mechanical cotton picker, which does the work of many men. Another is a flame chopper, still another a flame cultivator. In both, the principle of the Army flame thrower is used. The weeds or the extra cotton plants, as the case may be, are actually burned away by fire from torches mounted on a tractor. Perhaps, in years to come, these or similar machines will come into general use.

The use of machinery seems desirable, but the people of the cotton belt know that mechanical progress is not enough. The soil washes away just as rapidly when tractors are used. Insects are just as troublesome. The dependence upon a single crop—cotton—is just as bad. And, they ask, "What will sharecroppers do for a living, if new machines take their places in the fields?"

A new South is growing, as there is a new North, a new East, and a new West. In this new South, progress in farming is based on education, growing different crops, and on soil conservation, as well as on the use of new machinery.

Growing Tobacco

Where tobacco is grown. The growing of tobacco is not nearly so widespread in our country as the growing of cotton. You can learn from the map (Fig. 89), that most of the tobacco lands are in North Carolina and near-by states. There are many tobacco farms in Kentucky. If you look carefully at the map, you can see dots in Tennessee, in southern

Wisconsin, in Connecticut, in Pennsylvania, and so on. The two pictures on pages 82-83 were taken in North Carolina. This is one of the major centers of tobacco production.

Tobacco farming may vary somewhat from one place to another in the type of tobacco grown, in methods of work, and in marketing. The picture on page 82 suggests one thing, however, that is true wherever tobacco is grown. Tobacco requires an enormous amount of hand labor, perhaps three times as much as cotton.

A tobacco farm. The story of one tobacco farm in central North Carolina will suggest what many farms are like in that area. This farmer has about 60 acres of land. Only about five acres are planted to tobacco. That is about all that one family can care for. There are, also, small fields of corn, wheat, oats, and hay. A little more than half of the farm is pasture and woodland.

Each February the farmer clears a new spot in the woods, carefully prepares the soil for a seedbed, and plants the tobacco seeds in it. About the first of April he hitches his two mules to a walking plow and begins to turn the soil in the field where the tobacco plants are to be set. Later, fertilizer is added to the soil. Sometime in May, the tobacco plants are transplanted from the seedbed to the field. On this farm the tobacco plants are set out with the help of a simple hand tool. On some other farms a horse-drawn machine is used.

Still the work has only begun. The fields must be cultivated four or five times. Various bugs and worms must be destroyed by poison or must be picked from the leaves. Each plant in the field is "topped," that is, the top of the stalk is broken off so that the leaves will grow better. Many of the small branches must be removed, all by hand. The entire family may help with work of these kinds.

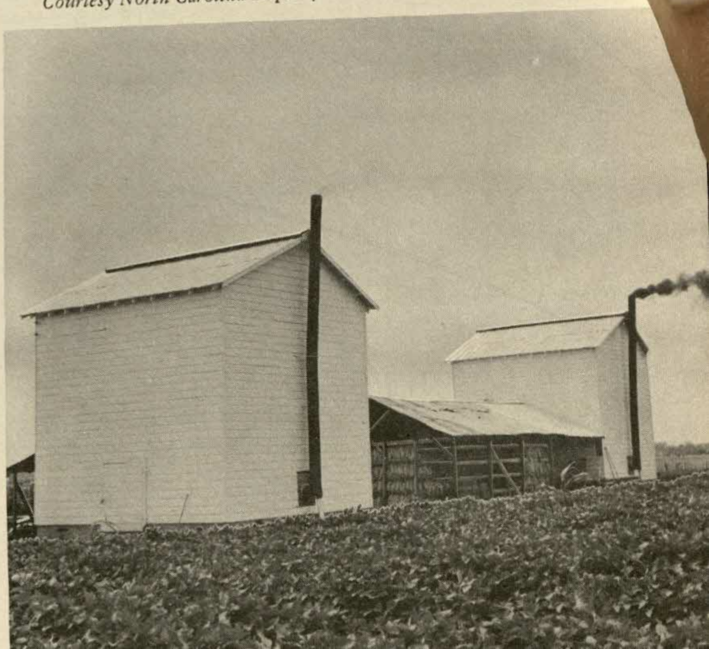
The man in the picture on page 82 is "priming" tobacco, that is, he is gathering the leaves which are ripe, or "prime." These then are carried on a sled to the farmstead, strung on sticks, and hung for a week in a heated barn, like those shown in the picture below. Soon the leaf turns a bright yellow and is ready to be taken to a warehouse and sold at auction. The farmer can carry the entire crop to the warehouse by hauling a few trailer loads of tobacco behind his automobile.

The farmer makes a small part of his living from his garden, some chickens, a few pigs, and two cows. Most of the grain produced on the farm is fed to the livestock, including his two mules. The farmstead includes the house, a simple barn for the mules and cattle, sheds for the pigs and chickens, and two well-built tobacco barns (Fig. 91). To the farmer the tobacco barns are very important, for most of his living comes from a single crop—tobacco.

Fruit and Vegetable Farming

Other leading crops. It would be a mistake to think of wheat, corn, cotton, and tobacco as the only major crops in our country. In many years, the fruit and vegetable crop alone has been worth considerably more than the entire wheat crop. The potato crop, which ordinarily is not included with the vegetables, may be worth about as much as the tobacco crop.

Figure 91. Tobacco barns
Courtesy North Carolina Dept. of Conservation and Development



The two maps below show that there is no single fruit belt or truck-farming belt in the country. Instead these farms are scattered widely from coast to coast.

In an orange grove. The picture at the top of page 85 shows a man at work in an orange grove in southern California. He is repairing one of the dirt ridges which controls the flow of water to near-by trees. Without irrigation there would be no orange groves in that land of almost rainless summers. Some of the water comes from wells, some from local streams, some from rivers farther away. The water in the picture, after leaving a mountain stream, traveled more than 200 miles through canals and tunnels, before it reached the orange grove.

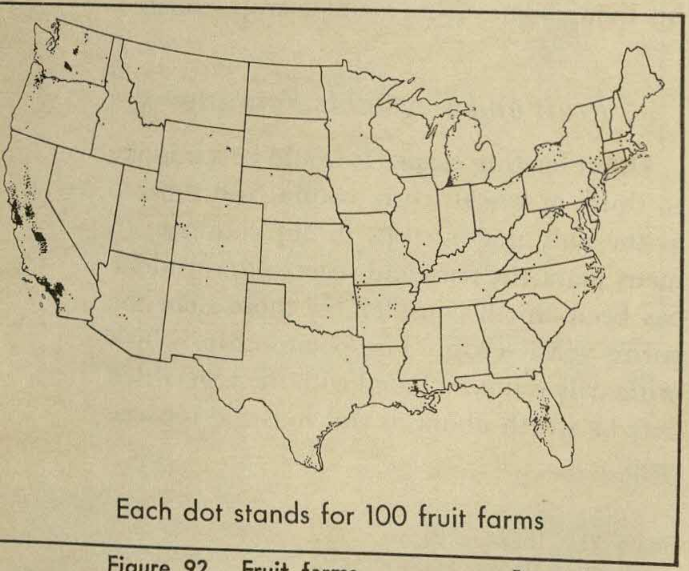
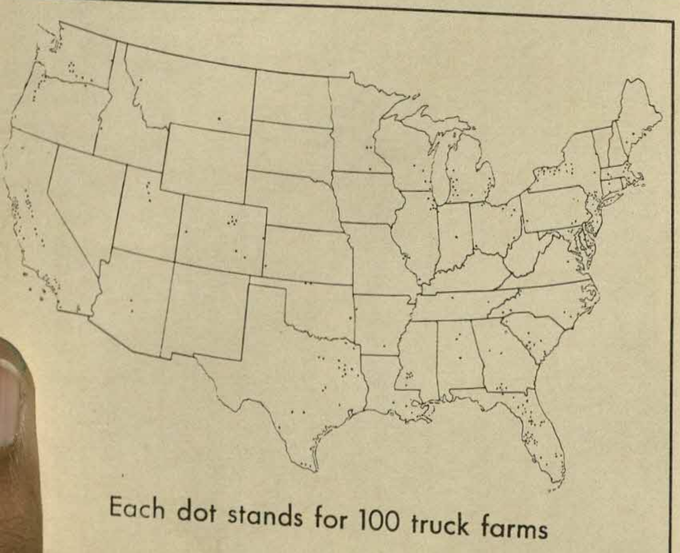


Figure 92. Fruit farms *Bureau of the Census*

Figure 93. Truck farms *Bureau of the Census*



An orange grove is a busy place at many times of the year. Tractors pull cultivators back and forth between the rows. Men prune the trees, cutting off certain undesirable branches and burning them. The ground is fed a carefully measured amount of fertilizer.

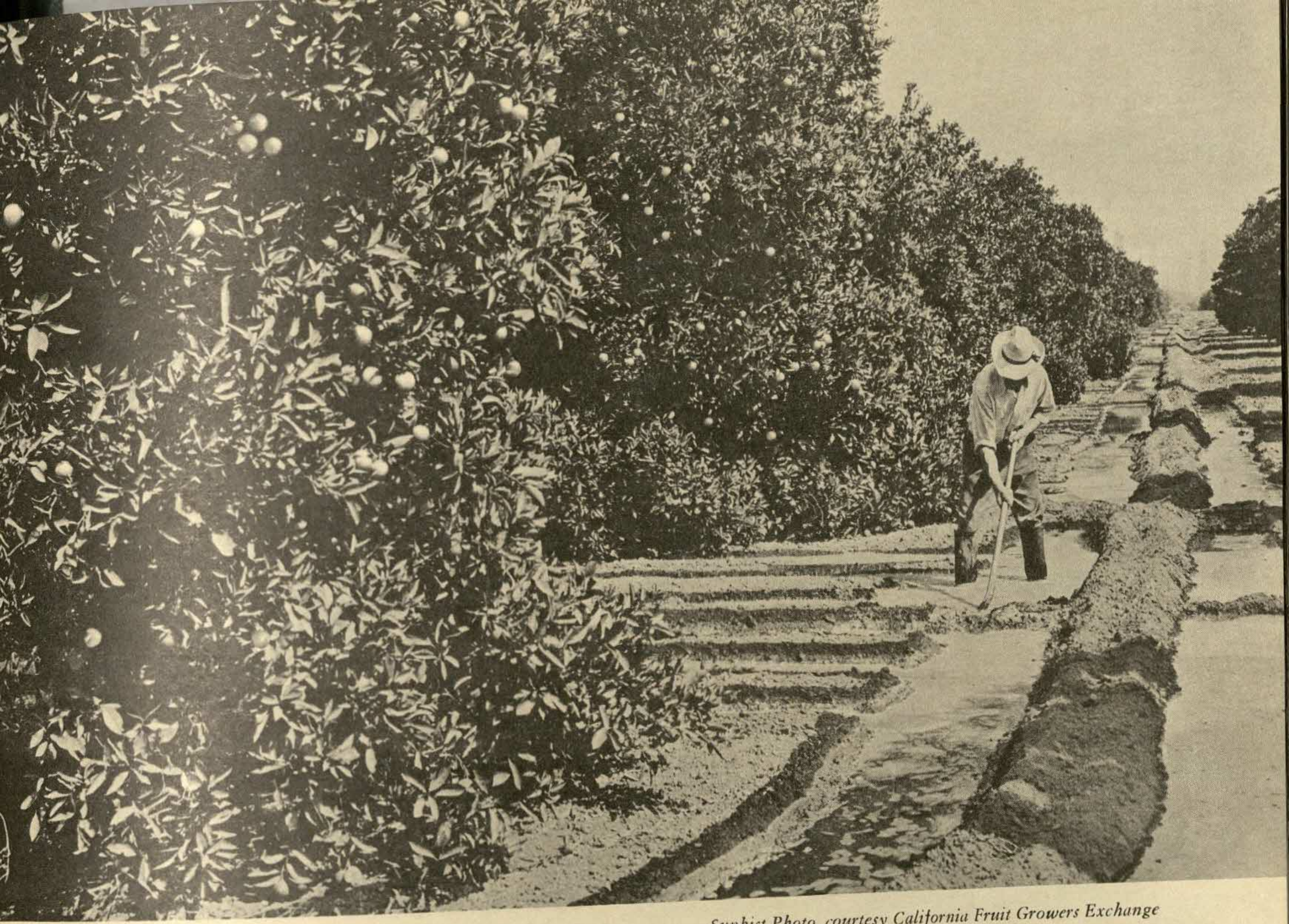
The battle against insects is never over. Usually spraying the trees is not enough. Many trees are fumigated. When this is done, a great tent is placed over an entire tree. Then a certain gas is released under the tent, killing the insects but not damaging the tree. Many orange growers have bought thousands of ladybugs, and have released them in their groves. Ladybugs are beetles that are not harmful to trees but eat other insects that are.

The mild winter climate of southern California is well suited for growing oranges. But the area is not entirely frost-free. Advance warning of frost usually is given by the weather bureau. Many growers also have automatic alarms which ring even in the middle of the night, if the temperature drops too low. During the winter thousands of small stoves are kept standing in many groves. On a night when frost is expected, these stoves are lighted. Usually they can warm the air enough to save the crop.

The oranges in the picture will be picked soon. This brings more workers to the grove than at any other time. As the men gather the golden fruit, truckload after truckload of oranges will move toward town or city. The fruit may be carried in large trucks or refrigerated freight cars to markets thousands of miles away.

On a truck farm. The picture at the bottom of the opposite page was taken in northeastern Florida. The farmer is cultivating a big field of celery. For this work he uses the most modern machinery. But power machines cannot do all the work on a truck farm. Crews of men are needed to set out the celery plants and to harvest the crop. The celery from one acre may fill an entire freight car.

It was January when this picture was taken.

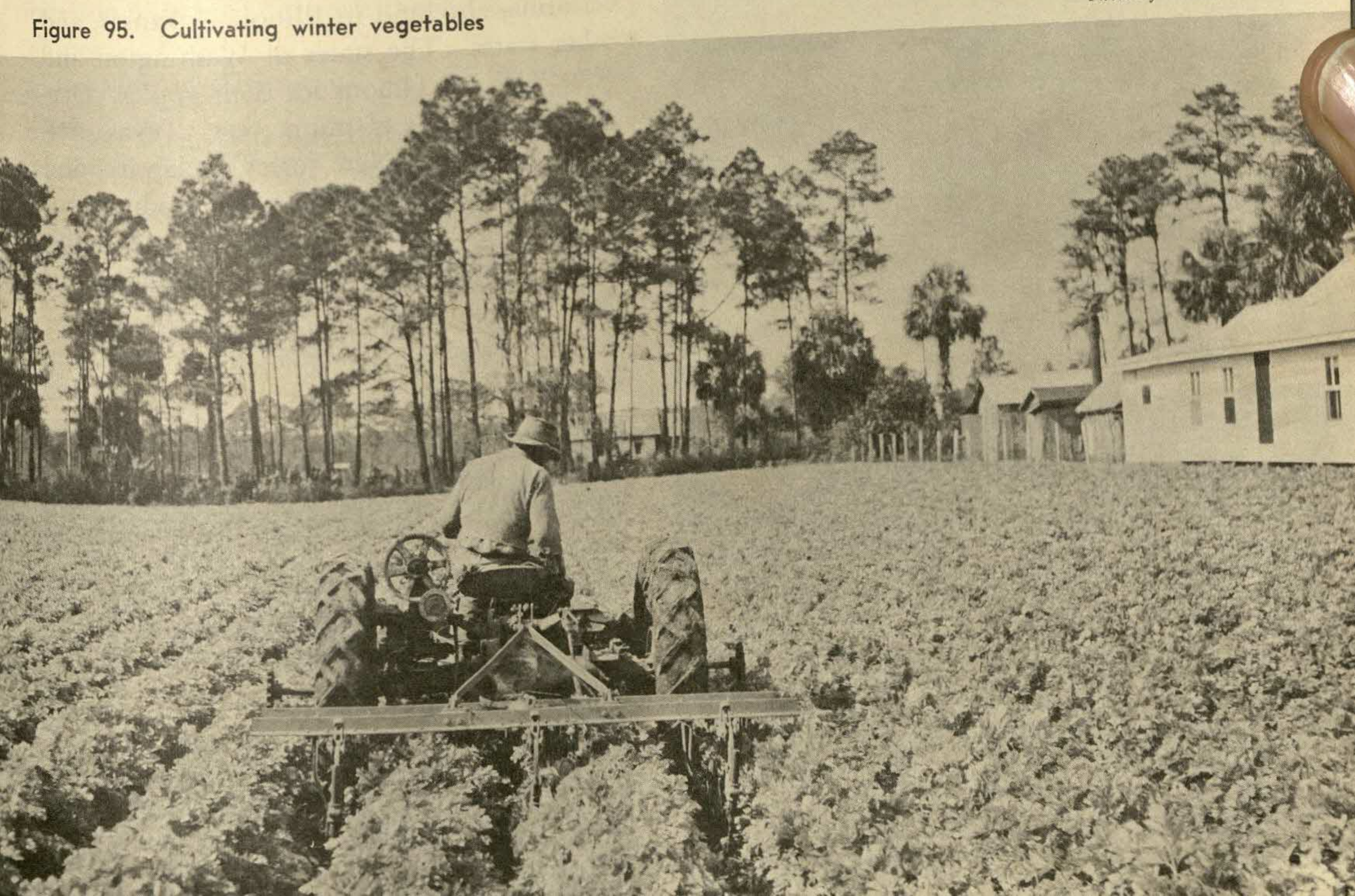


Sunkist Photo, courtesy California Fruit Growers Exchange

Figure 94. In an orange grove

Photo by author

Figure 95. Cultivating winter vegetables



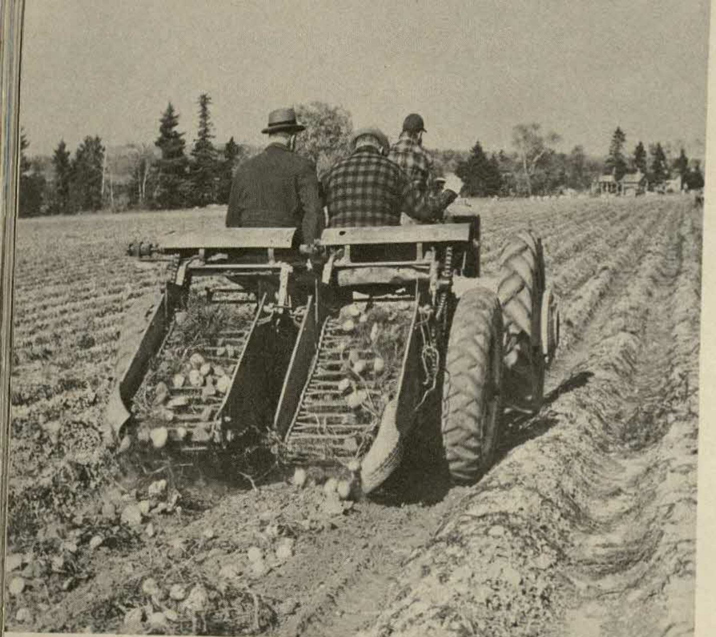
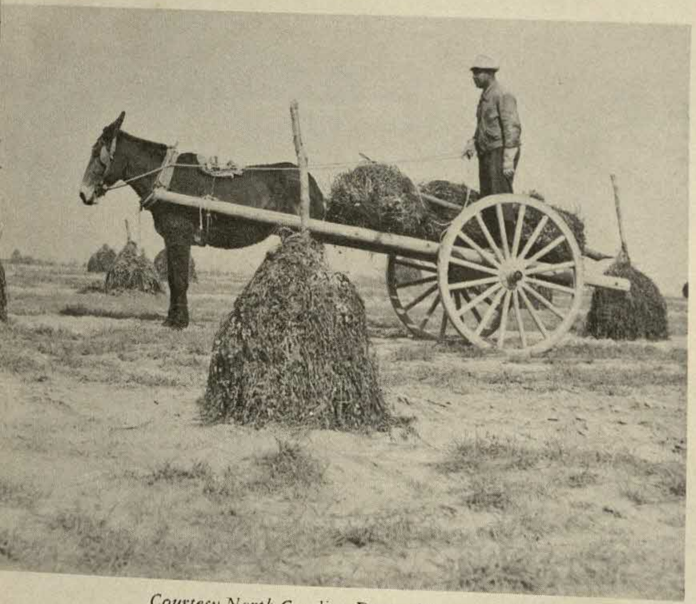


Figure 96. Potatoes *Jack Delano*



Courtesy North Carolina Dept. of Conservation and Development
Figure 97. Peanuts

This suggests that Florida has an advantage for farming similar to that of California, a mild winter climate. Each winter several thousand carloads of celery are shipped from Florida to markets in the northern states. Thousands of carloads of other vegetables, such as beans, cabbages, tomatoes, and cucumbers, also move northward. When summer comes, truck farmers in states farther north supply most of the nation's markets.

From coast to coast. California and Florida are the two great states in the production of fruits and vegetables. But the maps on page 84 remind us that there are many fruit and truck farms in other states. On these farms there are differences in methods of work and in the kinds of crops raised. This we should expect, for there are many local differences in things such as soil, weather, and distance from market. Naturally, then, farmers in one region may specialize in a particular crop or combination of crops, while farmers in another region make a different choice. Georgia, for example, has become widely known for its peaches. Many peaches are grown in South Carolina, also, and in Illinois, Arkansas, and other states. The states of Washington and New York are famous for their apples. Oregon has millions of plum trees. Texas, Arizona, New York, New Jersey, Delaware, and Maryland are among the chief producers of vegetables. Many kinds of fruit are raised along the eastern shore of Lake Michigan.

Figure 98. Horses *© Ewing Galloway*

Figure 99. Poultry *Arthur Rothstein*

For years there has been a friendly rivalry between California and Florida with regard to their climate, their tourist attractions, and their products. Both states can boast of their great crops of fruit and vegetables. Both raise huge crops of citrus fruit. Texas and Arizona, also, are noted for their production of citrus fruit.

As you have seen, there is great variety in the fruit farms and truck farms scattered from coast to coast. There are similarities, too. If you could take the check list (p. 74) and visit all of these farms, you would probably have the following notes with regard to most of them.

1. Farms are small. Most have less than 50 acres in crops.
2. Sheds for tools and machinery are more important than hay barns and silos.
3. Most of the workers do not own farms but work for wages.
4. Most farmers grow a single cash crop and raise little livestock.
5. Fine modern machinery is widely used, but for much of the work there are no machines.
6. Most of the crop is sold.

Other farms and other farmers. There are between five and six million farms in the United States. You have read about seven of these farms, described in more or less detail. These seven were selected because they suggest seven types of farming, each of which concerns millions of people. Of course, not all farms of any particular type are like the example selected. Yet in most of the details included in the check list (p. 74), each of the seven farms is like most of the farms of its type in the country.

The pictures on page 86 show still other farms and farmers. The first three suggest three more kinds of farms. The last one suggests something that is true of nearly all farms.

The top picture was taken in northern Maine, an area famous for potatoes. It is the time of the potato harvest. The machine is called a double-row digger, because it digs two rows of potatoes each time it moves across the field. Large quantities of potatoes are grown also in New York, Minnesota, Idaho, California, Michigan, and several other states.

The farmer in the second picture lives in North Carolina. He is hauling peanut vines to a threshing machine. The vines were stacked in this way, after they were dug, so that the peanuts would dry. This is a crop of increasing importance in states such as Virginia, North Carolina, Georgia, and Alabama.

The third picture shows a horse farm in Tennessee. Horses are being used less and less for field work. These fine horses are trained as saddle horses and race horses. Kentucky, too, is famous for its horse farms.

On the majority of farms in our country, there are some chickens or other poultry. The woman in Figure 99 is feeding a fine flock of chickens on a farm in Ohio. In most cases, the farmer's wife and children take care of the poultry. There are farmers, of course, who specialize in selling eggs or in raising poultry to sell.

Helps in Learning

1. List the names of the seven small maps between pages 75 and 85. Find your own state on each of these maps. Decide whether your state seems to be important or unimportant with regard to what is shown on each map. Then after the name of each map write "important" or "unimportant." What does this list now tell you about your state?
2. Choose a state far across the country from where you live. Find it on each of the seven maps you have listed. Then tell what you would expect to see if you visited the farms in that state.
3. Tell how the following have profited by the Industrial Revolution: the dairy farmer, the wheat farmer, the orange grower, the truck farmer.
4. Are oranges grown in your state? If not, what do you think is the reason?

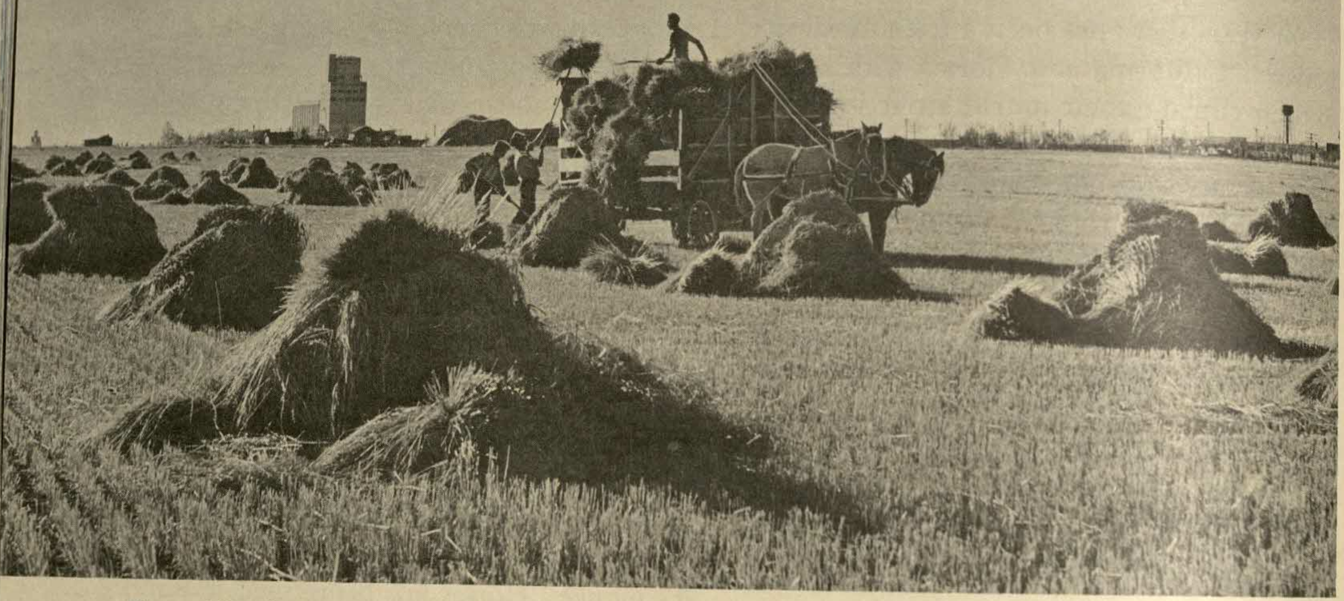


Figure 100. In western Canada

Courtesy National Film Board of Canada

5. If you live on a farm or if you have ever visited a farm, write a brief description of it. Is it like any of the farms described in this chapter? Give examples in explaining your answer.

6. Choose one of the following farms as a place to spend a vacation: the corn-belt farm, the dairy farm, or the wheat farm. Then copy the six headings in the check list on page 74. After each heading make notes that fit the farm you chose. For example, if you chose the dairy farm, you might want to write after *Size*: "Smaller than corn-belt farm. About 100 acres in size."

Then use your notes to describe the farm on which you would like to spend a vacation. If you live on a farm, you may describe it instead of choosing from the three farms listed.

Farmers of North America—in Canada and Middle America

In Canada

The western prairies. The map on pages 380-381 shows that the western plains extend without interruption from the United States into Canada. And as you can see (pp. 72-73), farm lands also reach across the border from Minnesota and North Dakota. In the northern half of Canada there are no important farm lands. Summers in those areas are too short and cool; winters are too long and cold.

By looking at the picture above there is no way of telling that it was taken in western Canada and not in the United States. The boundary line between the two countries marks little difference in farming. On both sides of it the land is almost level and the chief crop is wheat, planted in the spring. The farms and fields are big. Harvest days are the busiest of the year. It happens that the farmer who owns the field in the picture used a binder instead of a combine when the wheat was harvested. Some of his neighbors use combines.

A grain binder ties the wheat into bundles and drops them in rows in the field. Shortly afterward men set the bundles together in shocks, perhaps eight or ten bundles in each. In the picture it is threshing time. As soon as the men have loaded the bundles into their wagon, they will drive to a threshing machine, which is near the big grain elevator in the distance. There the bundles are fed into a thresher. A steady stream of grain flows into a truck on one side of the machine. The straw is blown onto a stack on the other side. Frequently this thresher is called a separator, since it separates the grain from the straw.

In Figure 100, the tallest two things built by man are the grain elevator and the water tower. This is true, too, in most towns in the wheat lands of western United States and Canada. To the elevator, farmers bring nearly all the wheat grown in the community. Water from deep wells is pumped to the water tower, and from it the townspeople get their supply. Both the elevator and the water tower may be seen miles away, long before the homes and stores of the town come into sight.

Along the St. Lawrence. As the map on pages 72-73 shows, there are farm lands, also, in eastern Canada. One strip reaches from the boundary near Detroit to the mouth of the St. Lawrence River. There are other farm lands to the north and east of Maine.

Along the St. Lawrence there is more mixed farming than is found in near-by lands in the United States. On one farm of a hundred acres, which is perhaps the average size, there may be 10 acres of woods, 15 acres in oats, 7 acres in wheat, 10 acres in barley, 30 acres in hay, 4 acres in gardens and orchards, and the rest in pasture.

Besides the well-built farmhouse there is a big stable that shelters 2 or 3 horses, 10 or 12 dairy cows, 6 or 8 sheep, and perhaps a dozen hogs. Horses, rather than tractors, are used on this farm. In the henhouse there is room for 75 or 100 chickens. Frequently one sees a sugar shanty, too, where in the spring the farmer boils down the sap of the sugar maple to make maple syrup or sugar.

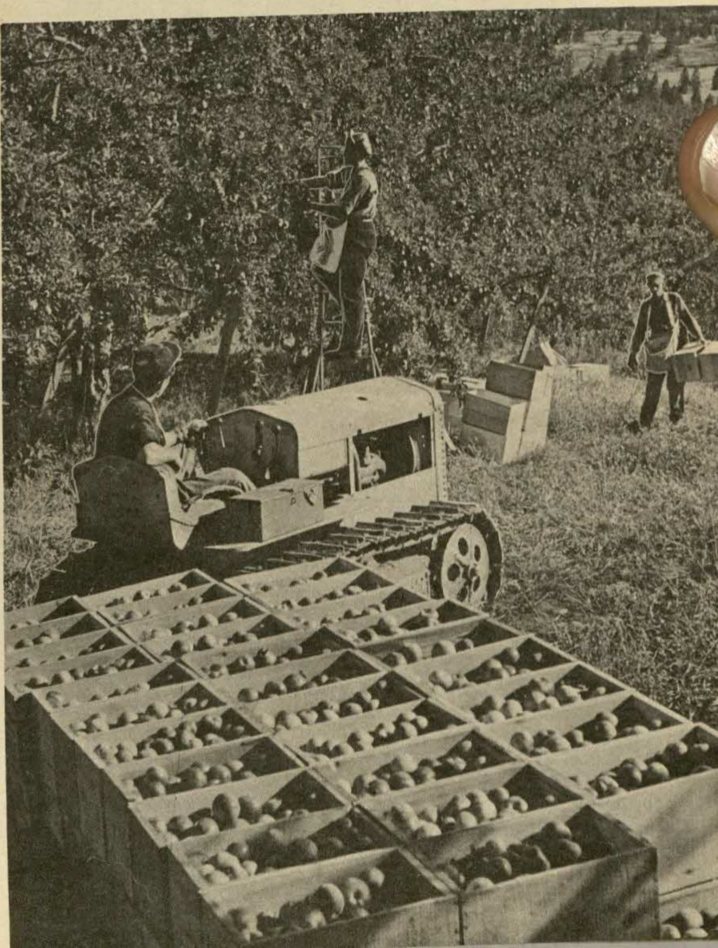
Since the farmer in the St. Lawrence lowland produces so many different things, he can get much of his own living directly from his land. He also has a little of many different products to sell. This gives him a feeling of security. If the wheat crop is poor, perhaps the hay crop will be good.

Some people believe that these Canadian farmers might make more money by specializing in one product. In fact, there are numerous truck farms, dairy farms, and even tobacco farms in eastern Canada. But most of the farmers along the St. Lawrence are engaged in mixed farming.

Near the sea. In the Canadian lands that border the sea, south of the St. Lawrence, there is also much mixed farming. Some farmers specialize, however, in potatoes, dairy products, and apples. Orchards, much like the one in the picture, are found in many places in eastern Canada. The peninsula east of Maine (p. 382) is particularly famous for

Figure 101. In an apple orchard

Courtesy National Film Board of Canada



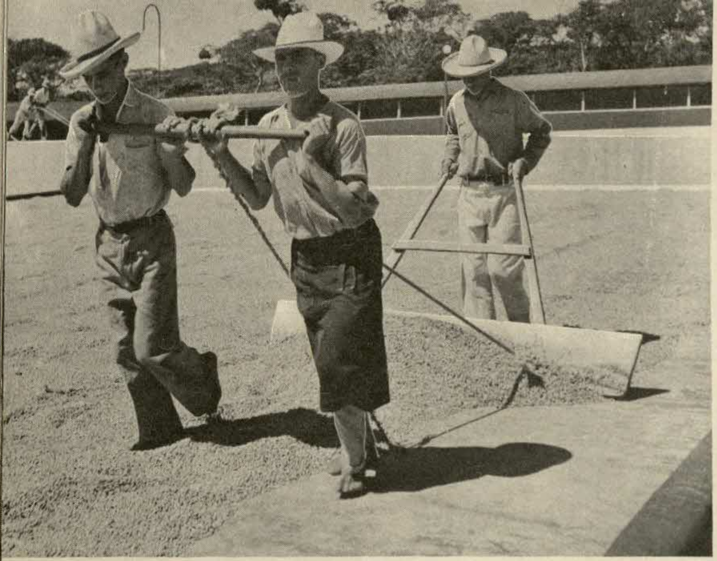


Figure 102. On a coffee plantation © *Ewing Galloway*

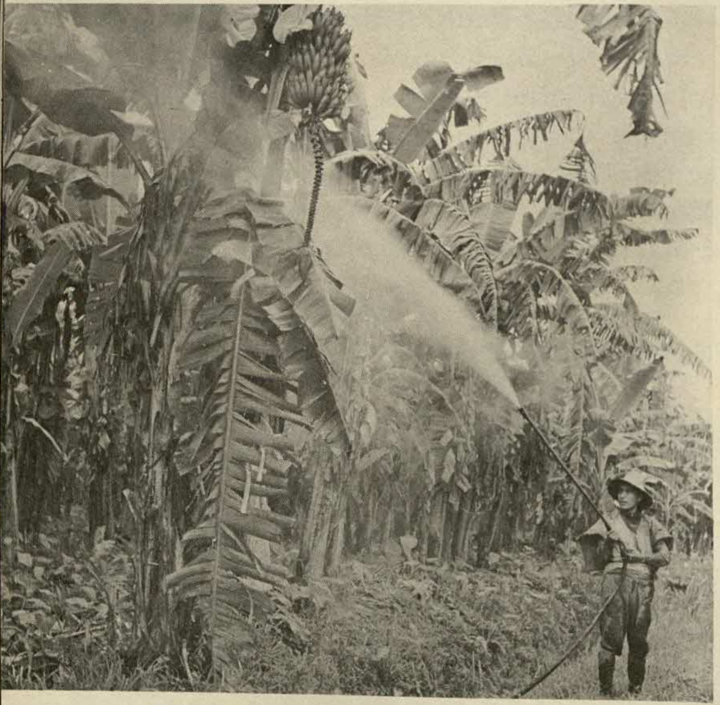


Figure 103. On a banana plantation C. I. A. A.

Figure 104. On a sugar plantation *Jack Delano*

its apples. One valley in this peninsula produces nearly half of all the apples grown in Canada.

The average apple farmer in the valley has at least 20 acres in apples alone. This suggests much work. The soil must be fertilized regularly. The trees must be sprayed at least six times during the summer. And picking the apples in a 20-acre orchard is a tremendous task. A tractor may pull a wagon load of apples to the barn, but every apple must first be picked by hand.

Apple farmers have learned that sometimes the apple crop fails due to bad weather, plant diseases, or insects. In some years the prices for apples are low. So, besides his apple orchard, the ordinary farmer in this part of Canada will have at least 100 acres of land in pasture and field crops.

In Middle America

To the south. The picture on page 61 and the pictures on this page show scenes in Middle America. This name is given to the southern part of North America and the near-by islands. Middle America includes Mexico, Central America, and the West Indies (pp. 382-383). Perhaps the name comes from the fact that these lands are "in the middle," between the United States and South America.

Plantation farming. There are even greater differences in farm life and work within Middle America than in the United States and Canada. Millions of farmers to the south have as yet profited little by the Industrial Revolution. Many of them live and work much as their forefathers did. Yet, in these lands, there are some fine, modern farms and plantations. The three pictures were taken on three of these modern plantations.

Figure 102 is a scene on a coffee plantation in the highlands of Costa Rica, just north of Panama (p. 382). The workers are dragging a kind of scraper across a coffee drying floor, so that the coffee beans will dry better in the sun. The owner of a big plantation like this one must hire hundreds of workers to care for the trees and the crop. Many of the workers come from subsistence farm villages near-by.

Coffee trees need warm weather, but they do not thrive in hot, rainy lowlands. There bananas and sugar cane are the chief plantation crops. The man in Figure 103 is spraying banana trees on a plantation near the coast of Guatemala (p. 382). Without such protection from insects, the crop might be lost.

Bananas do not keep so well as coffee, after being harvested. So as soon as the bananas in the picture are picked, they are rushed to a steamer which in turn rushes them to the United States. You can see, then, why it is desirable to have a banana plantation near the coast instead of far inland.

In the third picture, it is harvest time for sugar in Puerto Rico (p. 382). This island, as well as Cuba, is famous for its sugar plantations. Oxen will pull the wagons, heavily loaded with sugar cane, to a mill which has been built on the plantation. There the syrup for making sugar is removed from the stalks.

All three plantations are different, yet in some ways they are alike. On each the owner has provided expensive buildings and equipment. There are even railroads on the sugar and banana plantations. In general on all three plantations, the most modern methods of farming are used. Yet there is much hand work, too. Many workers are needed, men who receive wages for their work. Each plantation produces one specialty crop, most of which goes to market in some other land.

Subsistence farmers. Only a small part of the farm population of Middle America works on plantations. Most of the people are subsistence farmers.

Some subsistence farmers live in the hot lowlands. These are the lands most people think of when they think of the tropics—lands of heat, rain, dense forests, insects, and so on. A much larger number of subsistence farmers live on the high plateaus. There the weather is not so hot. The growing season is shorter. Naturally, then, farm homes and farm crops on the plateau tend to be different from those in the lowlands.

Cherán, on the Mexican plateau. The largest group of farmers in Middle America live on the Mexican plateau, between 5000 and 10,000 feet above sea level. Not all of them live exactly alike. But the story of Cherán will suggest what farm life and work are like in most of this plateau region.

Cherán is a community of about 5000 people. It has merchants, carpenters, tailors, and the like. Yet Cherán is really a large farm village. Most of the workers are farmers who depend directly on the land for a living. They live in the village, and go back and forth to their fields.

The ordinary farmer in Cherán lives in a small house of stone or adobe in a little courtyard. The kitchen is a separate building near the house. Within the courtyard, also, there is a shed for the cattle and burros, and perhaps a pile of straw with a roof protecting it. When people come to visit, they stop at the gate to the courtyard, and knock or call out. It is not proper to enter the courtyard without an invitation.

The average farmer in Cherán owns two or three separate pieces of cultivated land outside the village, totalling perhaps 15 acres. The forest lands on the near-by mountain slopes belong to the community as a whole. There any farmer can get firewood and timber, if he will cut it himself. When the cattle are not needed for work in the fields, they may be pastured in the forest. During the winter the animals may graze on corn stalks and wheat stalks that were left standing in the fields after the harvest.

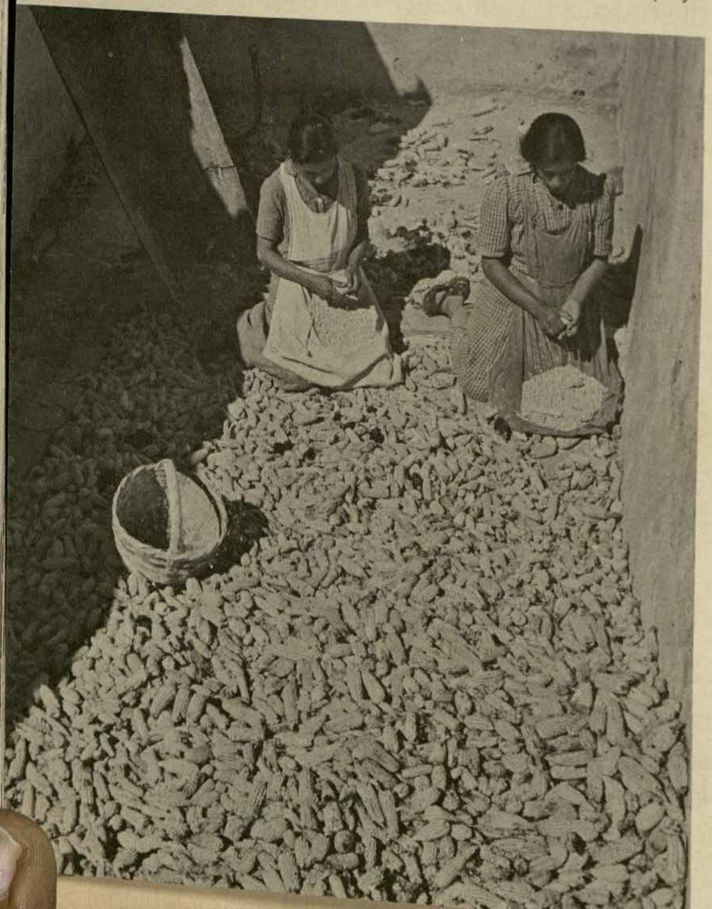
Crops in Cherán. Corn is the great crop in the Cherán community, occupying most of the cultivated fields. The picture on page 61 shows the first plowing for corn, in late summer or autumn. The second plowing for corn usually is in March, when danger of frost has passed. At this time a man walks behind the plow, drops a few kernels of corn with each step, and presses them down with his foot. A plow is used also in cultivating the corn, only this time it stirs the soil between the rows and throws some dirt around the bottom of the corn stalks.

Like most plows used in Cherán, the plow in the picture (p. 61) is made of wood. The Mexican government has lent some 30 steel plows to the people in Cherán, but these are few considering the many farmers.

When the corn is ripening, farmers take turns watching their fields, day and night, to keep out animals and thieves. At harvest time, each farmer goes through his fields again. He breaks off the corn ears and tosses them into a basket which he carries on his back. Later, a donkey will carry the baskets of corn to the farm home.

There are no corn-shelling machines in Cherán. Small amounts of corn may be shelled by hand, or the kernels may be rubbed off the cob with some simple tool. The picture in Figure 105 shows two girls who are busy shelling corn.

Figure 105. Shelling corn *© Henle, from Monkmeyer*



At almost any time of year, you can see pairs of corn ears hanging on poles in the farmhouses. Some corn is stored in this way for use as needed. A little corn may be sold, but most farming in Cherán is subsistence rather than commercial farming.

Wheat, beans, and certain other crops also are grown by Cherán farmers. Of these, wheat is the leading crop, but none compares in importance with corn.

Plowing for wheat is much like the first plowing for corn. After the ground is plowed, the wheat is sowed by hand. At harvest time, wheat is cut by hand with a sickle. Then it is tied in bundles, and carried to the farm homes in the town. Later, most of the wheat is scattered on the ground and threshed with flails. In doing this work, the men pound the wheat with long sticks to separate the grain from the straw. This kind of farming is almost entirely hand work.

Helps in Learning

1. Make a list of the headings in the check list, pages 74-75. Then under those headings describe one kind of farm in Canada.

2. Do there seem to be more differences in farming as one goes north from the United States or south? In explaining your answer, refer to particular farms you have read about.

3. What advantages might a farmer have in specializing in a single crop? What disadvantages? What advantages might there be in growing smaller amounts of several crops?

4. In some ways the plantations in Middle America are like the fruit farms and truck farms described on pages 84-87. Name two of these ways. Name one way in which they are different.

5. Corn is the chief crop both in Cherán and in the corn belt of the United States. Yet the ways of farming are not alike. What are some differences? The check list on page 74 will help you find some of the chief differences.

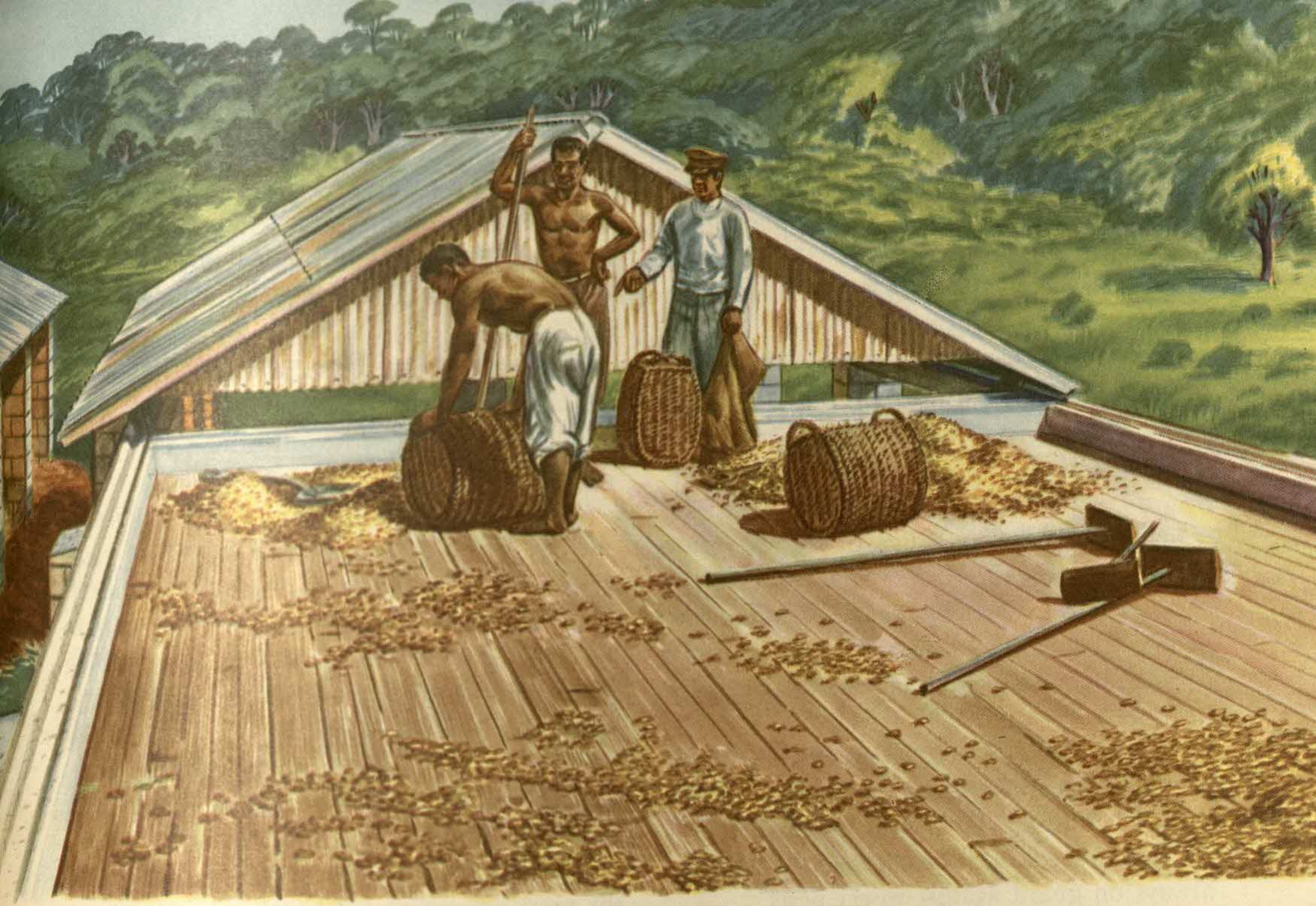


Figure 106. Drying cacao

From photo in LATIN AMERICA by Robert S. Platt, copyrighted 1942. By permission of McGraw-Hill Book Co., Inc.

Farmers of South America

Reading the maps. Where do the farmers of South America live? From the map of farming, pages 72-73, and the map of cultivated lands, pages 384-385, two things are clear. Farming is distributed very unevenly over South America. Only a small part of the continent is cultivated.

Along the coast of Brazil. The little squares on the map (pp. 72-73), crowded along the coast of Brazil, stand for different kinds of farms. There is much mixed farming that reminds us somewhat of the farms in the St. Lawrence lowland, except for a difference in crops. There are pioneer farms in the forests of southern Brazil, where hogs and corn are of chief importance. Then there are the plantations for which Brazil is famous—coffee, cotton, sugar, and cacao plantations.

A cacao plantation. The men in the picture above are workers on a 1500-acre cacao plantation near São Salvador, Brazil (p. 383). All around this plantation the land is covered with a dense forest. The rainfall is heavy, as much as 60 inches a year (pp. 372-373). All through the year the weather is warm. Such a climate is well suited to cacao.

The first task in harvesting cacao is the gathering of the pods from the trees. Each pod is from eight to twelve inches long and contains from 20 to 40 beans. After the pods have been collected in piles here and there in the groves, they are cut open and the seeds are removed. The seeds are then loaded in baskets which donkeys carry to the plantation headquarters.

At headquarters, the seeds are spread out on the drying floor, as shown in the picture (p. 93). The roof behind the men is movable. When rain comes, this roof is pulled into place above the floor to protect the beans.

After fermenting and drying, the cacao beans are put in bags, carried by truck or train to a seaport, and then by ship to other lands, including the United States. The word *cacao* is used to describe the trees and the raw beans. The words *cocoa* and *chocolate* refer to manufactured products made from the beans.

Harvesting is, of course, not the only task for the 100 workers who are employed on this cacao plantation. Trees must be planted and pruned. Weeds must be cut, and the men are always on guard against insect pests.

At headquarters, besides the drying floor, there is a home for the owner, a storage house for cacao, and a schoolhouse for the workers' children. The workers live in simple homes, scattered about in the groves. This cacao plantation is a kind of community by itself.

The other plantations along the Brazilian coast are, of course, not exactly like this one. One difference is that on some plantations the workers get a share of the crop. In general, however, all plantation farming in Brazil has many similarities. And it is much like plantation farming in Middle America (pp. 90-91).

In the middle of the continent—the Jivaros. As the population map shows (pp. 370-371), the vast interior of South America is a thinly settled land. The widely spaced squares on the farming map, pages 72-73, suggest the same fact. Only scattered spots of cultivated land are to be found between the coastal farm lands of Brazil and the Andes Mountains (p. 383).

One of these spots is shown in the picture on the opposite page. This is a simple farm village near Iquitos, in the western part of the Amazon Lowland (p. 383). There, as you can see from the maps, it is never cold (pp. 374-377). The rainfall is heavy (pp. 372-373). Dense, tropical forests cover nearly all the land.

The farmers in this village are Indians of a tribe called the Jivaros. Some of the Jivaros have been known as headhunters, but probably these are not.

Farming is simple and hard in the land of the Jivaros. Nearly every family must grow its own food. Since the soil wears out quickly, and since the weeds get worse and worse year by year, a farmer must make a new clearing frequently. Cutting down trees, building a house, hunting, and fishing, these are tasks for the men. The women plant the crops, care for them, harvest them, and look after the house.

A root called *manioc* is the chief crop and the most important food. When it is time to plant manioc, holes are punched in the ground with a sharp stick. Small shoots from growing plants are placed in these holes, and then the earth is packed around them. No one in the village has a plow.

When the roots are about a foot long, the manioc is harvested. The women use a digging stick, as it is called, to pry the roots out of the ground. They carry the manioc home in baskets. Manioc is prepared for food in several different ways. One way is to dry the roots and then grind them to make flour. From this a kind of bread is made.

There are other crops in the garden-sized fields of the Jivaros, including corn, sweet potatoes, sugar cane, squash, and peanuts. However, most space and care is given to manioc.

In a walk around this Jivaro village you might see various pets—dogs, cats, monkeys, or parrots. A village farmer may have five or six chickens, and a pig or two. There are no barns. The pets are kept in the house, while pigs and chickens are kept in small shelters, made of poles, to protect them from wild animals.

Elsewhere in the great interior of South America, there are many other kinds of farms. Along the Amazon River, there are a number of plantations on which special crops are raised. The Jivaros are a good example, however, of many scattered groups of forest farmers, little known by the outside world.

As you might guess, the Jivaros are less advanced than the people along the Brazilian coast. One reason is that they have little contact with the outside world. Ships stop frequently at ports along the seacoast, and some come far up the Amazon River. But it is difficult to get back into the forest where the Jivaros live.

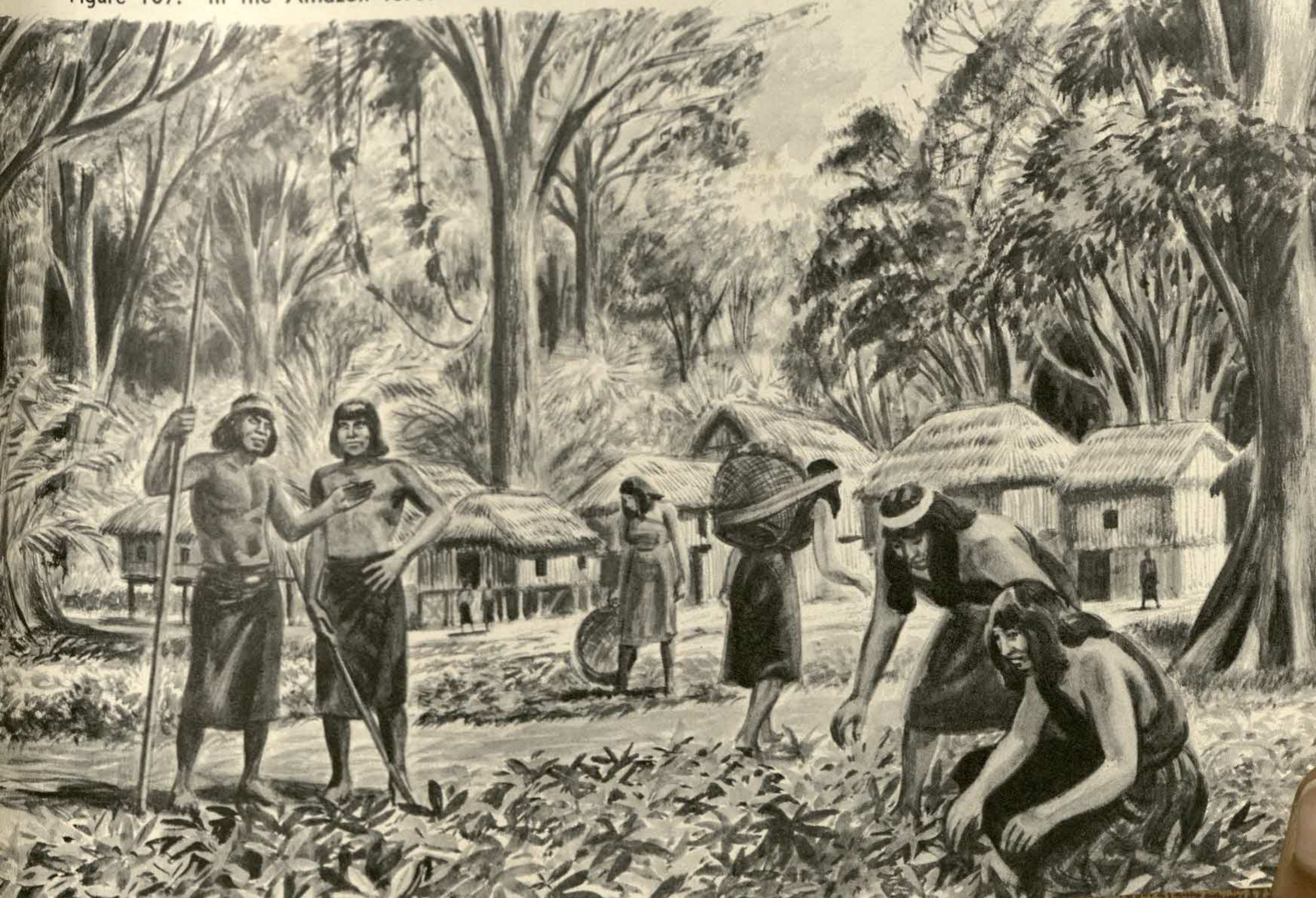
In the Andes. Rising high above the Amazon Lowland and the homes of the Jivaros are the Andes Mountains (p. 383). They stretch along the western coast of South America all the way from Venezuela to Chile. On the map of farming, pages 72-73, a line of squares follows the Andes, as far south as Bolivia. These squares stand for several million farmers. Most of them are Indians.

When the Spanish explorers, after the days of Columbus, fought their way into the American continents, they found two great Indian nations, each with many thousands of farmers. One was the Aztec nation on the Mexican plateau. The other was the Inca nation in the high Andes. The lands once farmed by the Aztecs and the Incas remain today the outstanding areas of mountain agriculture in the Americas.

One rather typical farm in the Andes is in a narrow mountain valley in Peru, just north of Lake Titicaca (p. 383). It is a farm of about 20 acres, most of it irrigated by a mountain stream. Most of the farm is planted to corn.

Figure 107. In the Amazon forest

Based on several photographs by Smithsonian Institution



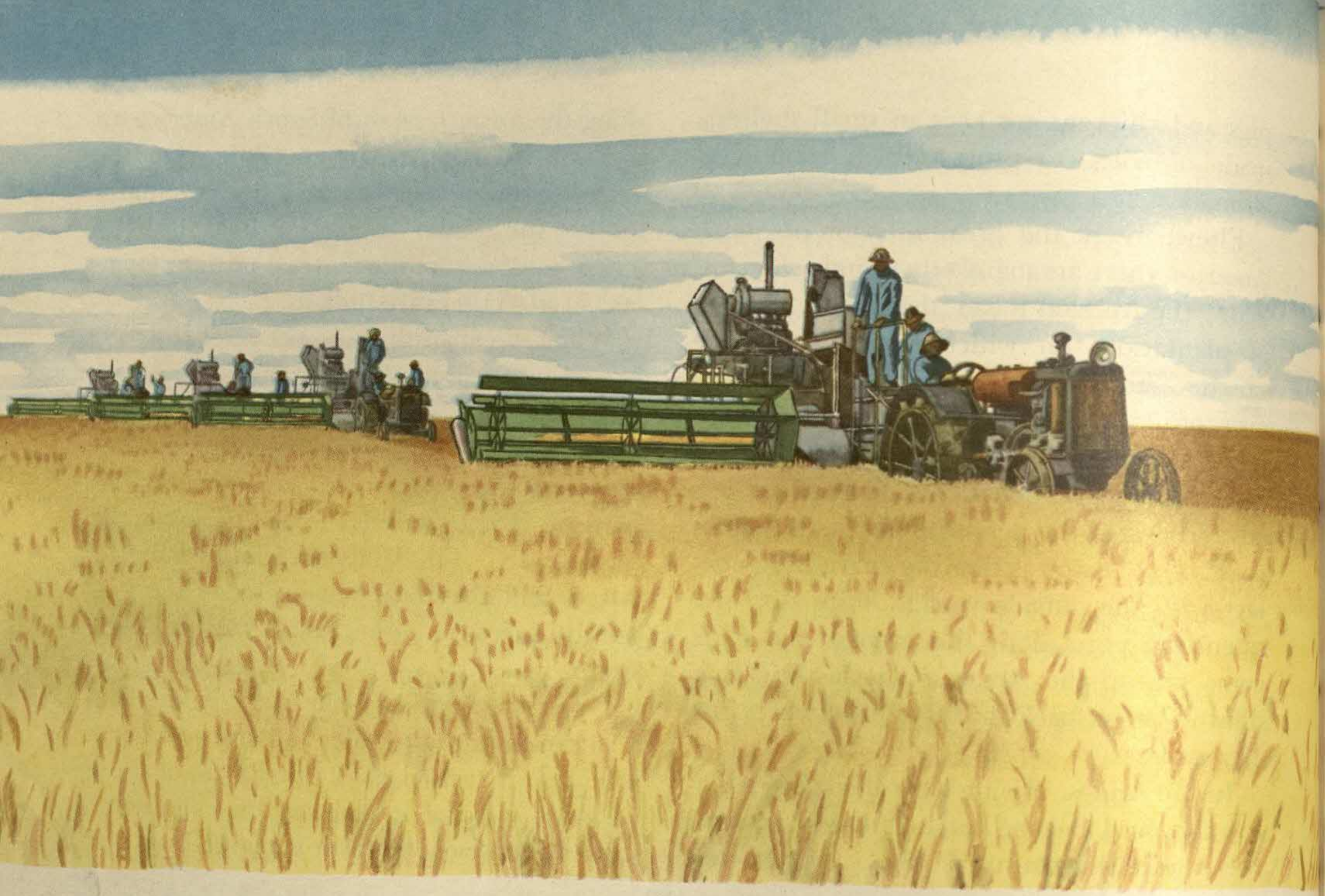


Figure 108. Harvest time on the Pampa

From photo by Three Lions

But in small corners of the fields, the farmer grows barley, alfalfa, and some vegetables, including cabbages and beans. He has a few sheep and cattle, which graze on the steep mountain slopes.

The farmer and his family can do all the work themselves, except at harvest time. Then they may hire several helpers. The plow is pulled by oxen. Otherwise the farm work is all hand work. In this case, there is not much surplus grain to sell, and the farmer buys few things. In many ways this farm reminds us of Cherán, although the village to which the Peruvian farmer belongs is much smaller than Cherán.

On some of the lower slopes of the Andes, particularly in Colombia and Venezuela, coffee has become a leading commercial crop, as it is in central eastern Brazil and in Middle America. But most farmers in the Andes are subsistence rather than commercial farmers. And Indian farmers far outnumber the rest.

In Argentina. Very different from farming in the Andes is farming on the Pampa, in Argentina. This is an area of rich farmlands, shown by the cluster of little squares in central eastern Argentina (map, pp. 72-73).

If a farmer from the Middle West, in the United States, flew over the Pampa, much of what he saw would remind him of home. The plains are endless, reaching on and on toward the horizon. The fields look like so many colored blocks, carefully fitted together. The fine lines which are roads and railroads seem perfectly straight.

On the ground, too, many things would have a familiar look—big fields of corn and wheat, fat cattle in the pastures, modern farm machinery. If the farmer from the Middle West happened to be there in January, the time of the wheat harvest, the scene above would not be strange. For there are striking similarities between the farmlands of the Pampa and those of middle western United

States—in soil, in surface, in climate, in crops and livestock, in farm work, and in the farm layout generally. Both are regions of highly commercialized production of grain crops. Both are bread-baskets for millions of people.

If the farmer from the Middle West stayed on in Argentina, visited farm homes, and talked to some farmers, he would also be impressed by differences. For instance, much flax is grown in parts of the Pampa. Many cattle are fattened on grass and alfalfa instead of on corn. Horses are cheap and are used far more than tractors. Cold winds blow from the south instead of the north. January, a winter month in the Middle West, is harvest time for wheat in Argentina.

The difference in farmsteads would be especially noticeable. Some Argentine farmers own many hundreds of acres of land, and have homes as fine as the best farm homes in the United States. But most of the farmers on the Pampa are tenants, who pay a share of their crop to a landlord for the right to use the land.

Ordinarily these tenants furnish their own livestock and farm machinery. They must also furnish their own houses and barns. Since the tenant farmer may be compelled to move within a few years, he may build only a simple house with mud walls. The animals and farm machinery are left without any shelter. Harvested grain, placed in sacks and covered, lies on the ground beside the rusty machinery. Though it seems strange, many thousands of farmers in the rich Pampa make only a poor living.

Other farmers of South America. About nine out of ten farmers in South America live in the areas described so far—the coast of Brazil, the vast interior, the Andes Mountains, and the Pampa. Yet other groups of farmers are important, too. There are fine sugar and cotton plantations here and there along the coast of Peru. Chile has a rich farming region in about the middle of the country. Sometimes it is called the California of Chile,

Figure 109. On a farm in Chile *Courtesy Grace Line*

Figure 110. A dairy farm in Colombia *© Ewing Galloway*

because the climate resembles that of southern California. Crops, also, are somewhat similar to those in California, as suggested by Figure 109. These boys seem to enjoy helping with the grape harvest.

In all parts of the continent, farmers are concerned with their food crops—manioc, potatoes, sweet potatoes, beans, melons, corn, rice, bananas, and many others. These crops may not make much difference in the lists of imports and exports. But they do make a great difference to the people who grow them. Many depend on their food crops for most of their living. Even on big plantations, the workers try to grow most of their own food.

Near every large city in the continent there are some dairy farmers. The farmer in Figure 110 lives near Bogotá, capital of Colombia (p. 383). Similar pictures might be taken in hundreds of other places. In the Pampa and elsewhere there are some very modern dairies. But there is no great dairy belt, as in the United States.

South America, then, is a land of many different kinds of farm work. In spite of this great variety, a few types of farming are outstanding, including plantation farming, subsistence farming, and commercial crop-and-livestock farming.

Helps in Learning

The cacao plantation and the Jivaro village differ in many ways. Use the check list (p. 74) in making notes about each settlement. Then tell at least three ways in which they differ.

2. Why does transportation have much to do with commercial farming? Use the story of one farm in South America to illustrate this.

3. Argentina has much rich farm land and ships millions of bushels of grain to markets overseas. Yet many farm workers in Argentina are poor. What are some reasons for this?

4. Explain why, in Argentina, "The cold winds blow from the south."

5. Use the maps on pages 374-377 in explaining why in the Pampa the grain harvest comes in January.

6. Look at the pattern of farming in Brazil (pp. 72-73). Then look at Brazil on the population map (pp. 370-371). Is the population pattern in Brazil much like the pattern of farming? How might the population pattern of Brazil change if farming should spread westward?

Farmers of Eurasia

Four out of five. In farming, Eurasia is the leading continent in the world. As you have learned, there are four outstanding farm regions in the world. The maps on pages 72-73 and 384-385 show that one of these regions is in North America. Another is in western Europe and Russia. The third and fourth are in southern and eastern Asia. Perhaps four out of every five farmers in the world live in Eurasia.

In Northwestern Europe

Comparisons. The roots of American agriculture are in Europe. As you read earlier, page 55, the pioneers in the American continents used some of the methods of farming they had learned in Europe. But here on this side of the Atlantic, the land, the weather, the forms of government were not quite the same, and agriculture developed somewhat differently from that in the homelands. Today, as we look at farming in Europe, we find that in some ways it is like farming in the United States. In other ways it is different.

There is no one typical European farm any more than there is one typical American farm. In general, however, the farms of northwestern Europe have many things in common, as have the farms of southern Europe and of eastern Europe. The following stories of farms in Britain, Denmark, Germany, and France will suggest what many farms in northwestern Europe are like.

A farm community in England. Almost exactly in the middle of England there is a small farming community called Helidon. From a near-by hilltop one can count most of the 40 buildings that make up the village. These include the homes, a church, a post office, two small stores, and a schoolhouse. A baker comes to Helidon every day, and a butcher comes twice a week, from a larger town some five miles away.

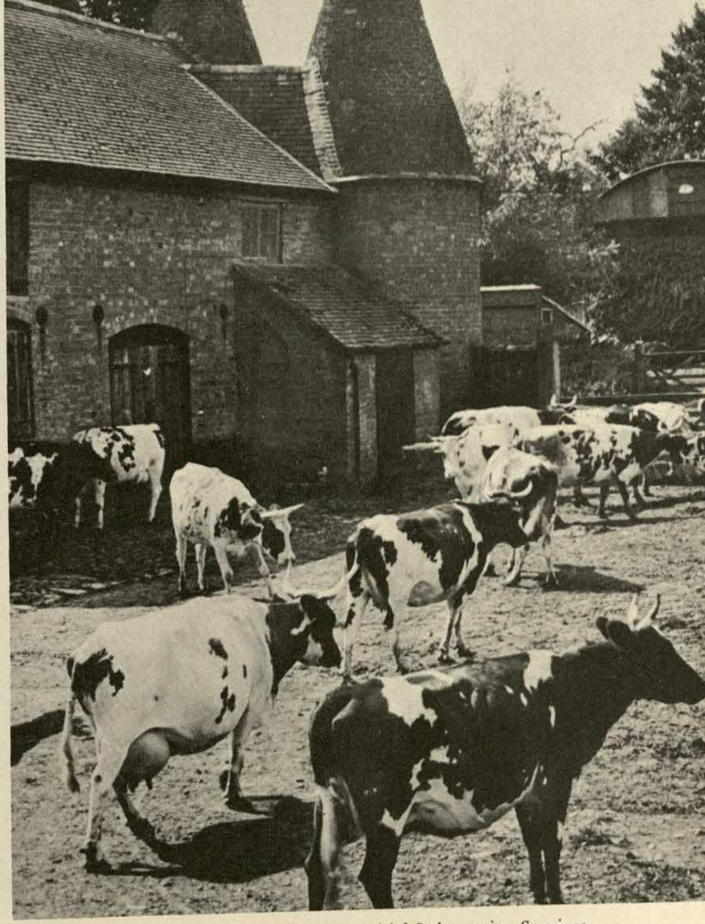
The two pictures on this page suggest two kinds of farm work which are common in Helidon—caring for livestock and growing grain. This is an area of mixed farming. Tractors are used more widely in England than anywhere else in western Europe.

One rather typical farm lies beyond the hill, about a mile from the center of Helidon village. In this farm, there are about 150 acres. Most of the land is too steep or rocky, or the soil is too poor for growing crops. As a result, the farmer has only about 50 acres in plowed fields. In one season he may have 10 acres planted to oats, 10 or 15 acres in clover, 5 in wheat, 5 in barley, and much of the rest in potatoes or other root crops. The following year he may grow clover where there was wheat, and plow up a clover field and plant oats. Unless crops are rotated from year to year, the soil may soon wear out.

This farmer never grows corn, for corn needs more hot weather than can be expected in an English summer. No part of Britain has a long, hot summer.

As you might guess, this Helidon farmer makes an important part of his living from livestock. He has nearly 200 sheep, about 10 dairy cows, and some beef cattle. He sells some of the grain he raises, but much of it, together with root crops, he feeds to his livestock.

Every morning the milk is collected from

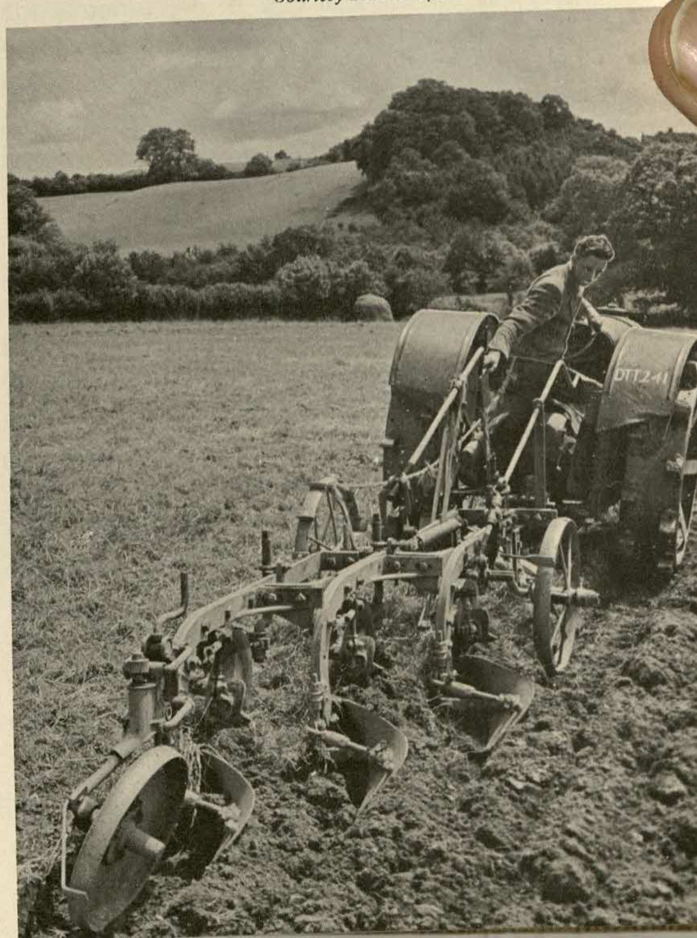


Courtesy British Information Services

Figure 111. An English dairy

Figure 112. An English grain field

Courtesy British Information Services



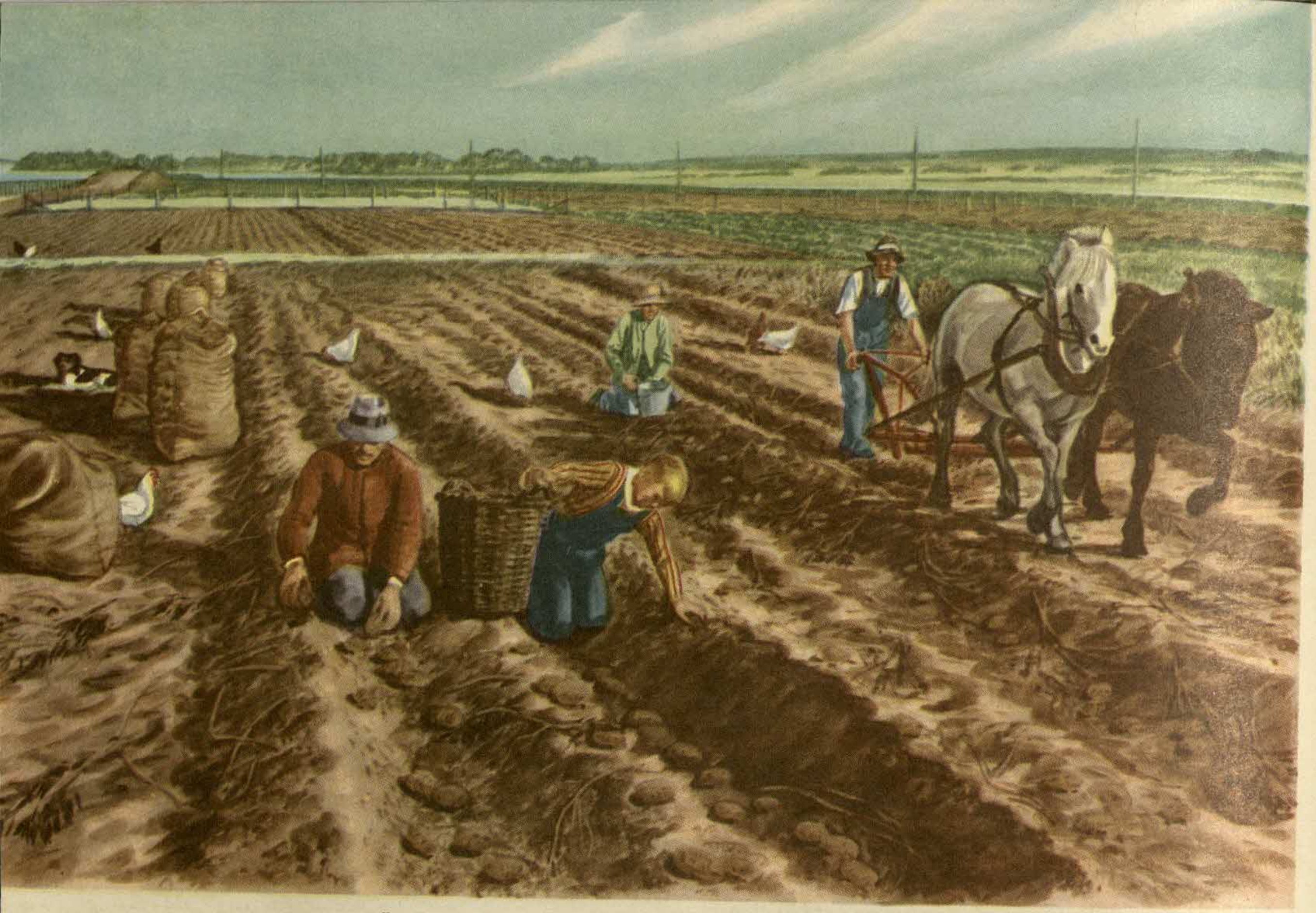


Figure 113. A big crop of potatoes

From photo by Three Lions

the farm by a man driving a truck, or motor lorry as the English call it. Fortunately the side roads, or lanes as they are called in Helidon, are paved. The trucks can come regularly, although the weather frequently is rainy. Sooner or later, most of the milk is shipped by rail to London.

Helidon is a quiet place, off the main highway and not on a railroad. In fact, it is so quiet that it seems changeless. But the older men in the village tell of days when things were different. They point to an abandoned mill near the village that looks somewhat like a Dutch windmill. Years ago that mill was in constant use, grinding grain which was produced in the community and used in the community. This seemed natural, then, for the lanes, or roads, were deep in mud on many days of the year. It was difficult to get to other towns or villages. At that time, too, there was less dairying, for it was not easy to get milk to market.

Now, many products, including surplus grain and milk, move to markets outside the community. In return, the village people buy many more things from the outside world. The flour for their bread may have come from a wheat farm in Canada, for example. Now the old mill is idle, as transportation improves, as trade increases, and as widely separated peoples become more and more interdependent.

On a dairy farm in Denmark. The picture above shows people at work on a farm in Denmark (p. 394). It is autumn, time for harvesting potatoes. One farmer guides a plow along each row, turning up the soil and the potatoes alike. Other workers gather the potatoes, frequently digging in the loose soil to be sure they have them all.

This farm is like most Danish farms. It is small, about 30 acres in size. The barns are large and well built. The owner works the land himself. Besides the team of horses, he

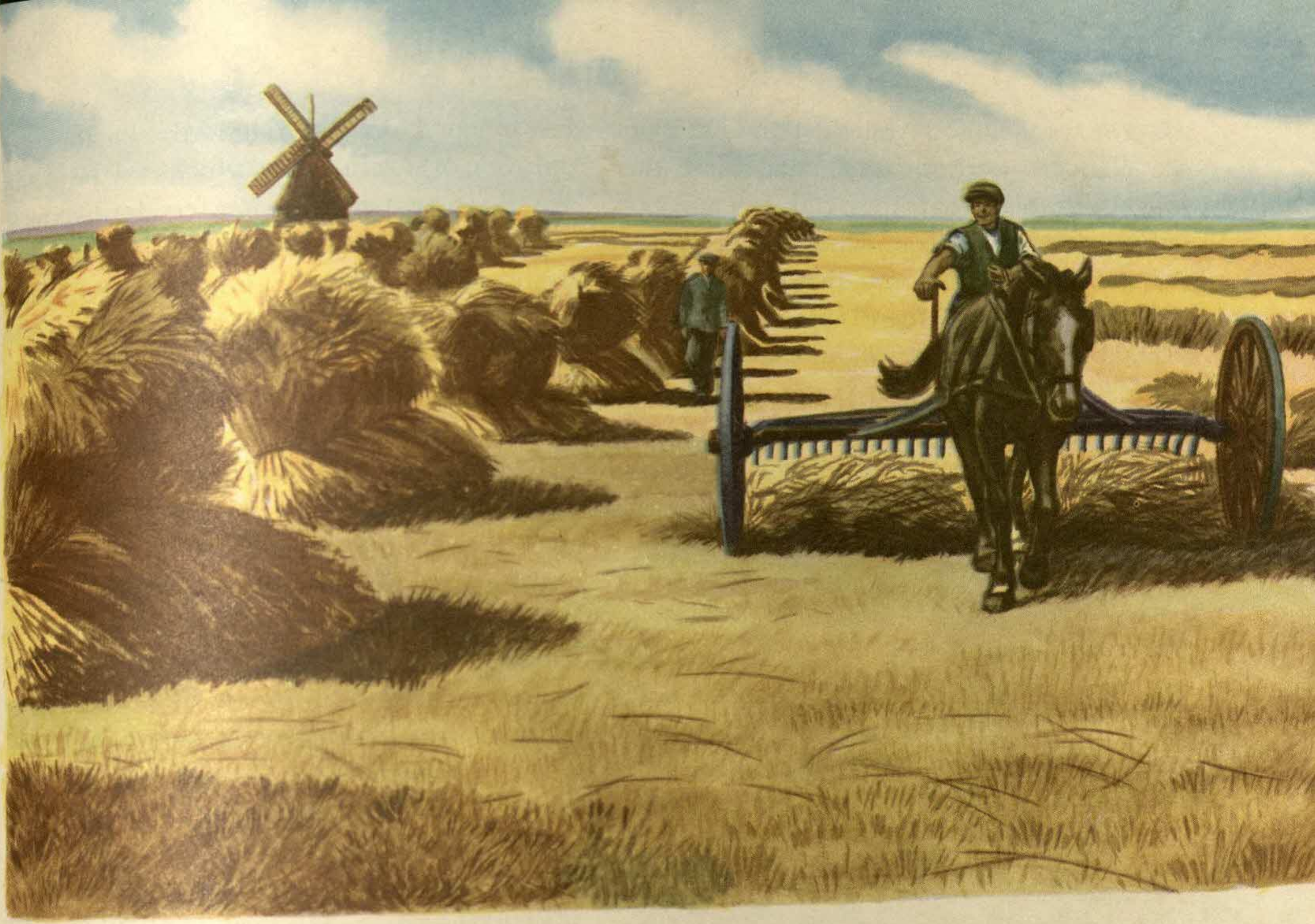


Figure 114. Rye harvest

may have 15 cows, 10 pigs, and 60 or more chickens. Like the farmer in the Helidon community, this farmer rotates his crops. One year he may have half of his land in grain, mostly oats, barley and rye. Some 10 acres will be in hay and pasture. Probably the rest of the land will be in root crops, including turnips, mangels (beets), and rutabagas, as well as potatoes.

Danish farmers have learned that root crops can grow well in soils too poor for wheat. And they thrive where summers are not hot. It takes more work to care for an acre of potatoes than an acre of grain, such as oats. But root crops generally produce at least twice as much food per acre as any grain crop. These are some of the reasons that help to explain why root crops are raised so widely throughout northwestern Europe, a thickly settled land where farm land is scarce, many soils are poor, summers are cool, and labor is plentiful.

Most of the crops from a Danish farm are used on the farm. The family will use a small amount of grain and a part of the potatoes and other root crops for food. Nearly everything else is fed to the cows, the pigs, or the chickens. The farmer's cash income depends largely on the sale of milk, pigs, and eggs.

Every day trucks take the milk to a dairy. There the cream is removed, and most of the skim milk is taken back to the farm and fed to the pigs. In fact, skim milk is one of the chief foods for pigs in Denmark. Danish farmers have a saying, "The pig hangs on the cow's tail." By this they mean that raising pigs depends much on raising dairy cows.

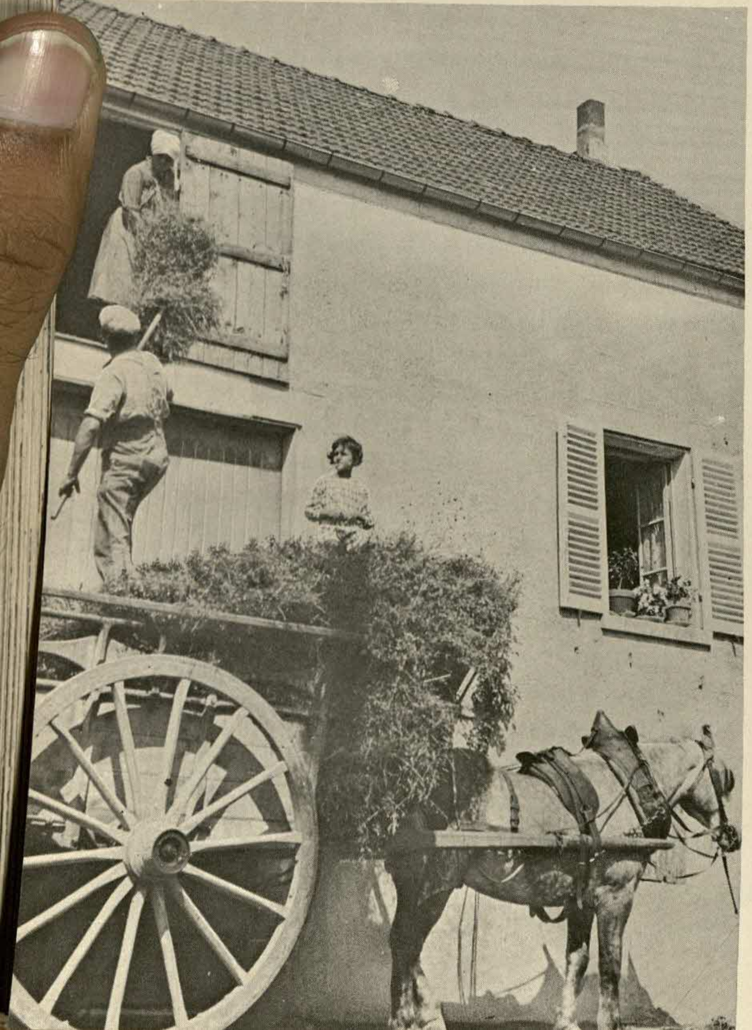
In Germany. For years the chief foods of German farmers have been potatoes, pork, and rye bread. These point toward a kind of farming which is common in that country.

Rye and potatoes are the chief crops in Germany. In the picture above a farmer is raking together the scattered stalks of rye which happened to fall to the ground while the crop was being harvested. This field is on the plain of northern Germany, where the soils are so poor that, it is said, rye and potatoes are the only crops which can be grown successfully. It is said, too, that the pig is the only animal which these farmers can raise profitably to turn potatoes into meat.

Most German farming is mixed farming. On the average farm, there is a garden and some poultry. Most farmers have a few dairy cows and a team of horses or oxen for work in the fields. In middle and southern Germany, in addition to rye, farmers may raise barley, wheat, sugar beets, or any one of a dozen other crops. In fact it is not uncommon to find 10 or 12 different crops on a single farm of not more than 40 acres.

Many farmers have silos. But these silos are not tall, round structures like the one on page 78. Instead, the ordinary German silo is a pit, or large concrete tank. Potatoes are only one of several crops which may be put in the silo to be used as winter feed for livestock.

Figure 115. Both house and barn *© Rapho-Guillumette*



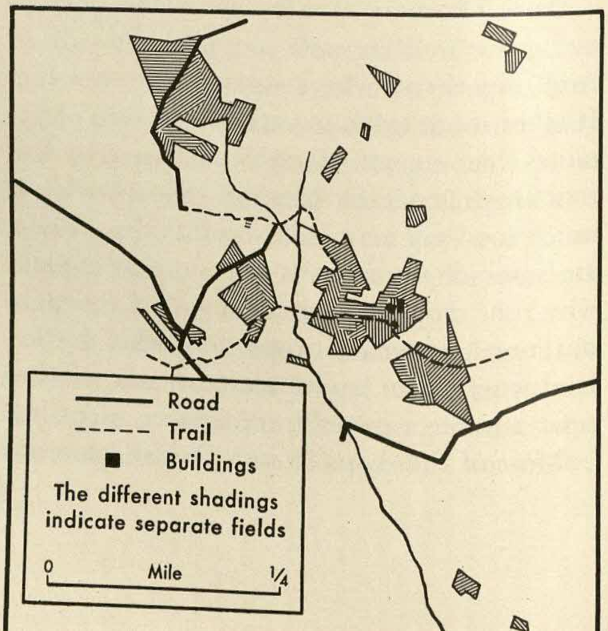
France, a land of mixed farming. In France, as in most of northwestern Europe, mixed farming and dairying are common. Although individual farmers may have specialties, such as grapes or vegetables, in the country as a whole mixed farming is the rule.

In Figure 115, a French farmer is unloading hay into the loft of his barn. The wide barn door is almost hidden by the cart. House and barn are under one roof, as is the custom in many parts of Europe. On the right, you can see one window of the farmhouse. Flowers are standing on the window sill. The farmer can step directly from his kitchen to the stable. The two-wheeled cart drawn by a horse is widely used throughout France.

A French farmer. Mr. Raymond is a rather typical French farmer who lives in a village in central France. His farm of about 60 acres is somewhat larger than the average. But the same kinds of crops and livestock might be found on thousands of other farms. About one-third of his land is planted to wheat, which is the chief grain crop in France. The rest is in oats, alfalfa, sugar beets, hay, pasture, and garden. In his well-built stone barn he keeps four dairy cows, a pair of oxen, a

Figure 116. Scattered fields

After a map in "Economic Geography"



horse, a pig, some chickens, ducks and geese, and a few rabbits.

Mr. Raymond values highly the big pile of manure outside the barn door. This will be carted to the fields and carefully spread on the ground. He may also buy some fertilizer. By careful methods of farming, by enriching the soil, and by rotating crops, French farmers have kept their soil from wearing out, though the same fields have been farmed for hundreds of years.

The Raymond family gets most of its food from the farm. Most of the cash income is received from the sale of wheat, sugar beets, and dairy products. Now and then Mr. Raymond may sell a calf to the butcher, or a rabbit to an innkeeper in the village. Sometimes Mrs. Raymond takes a few vegetables or an extra hen to the market.

Much of Mr. Raymond's work is hand work, for his machines are small and simple. One reason is that his farm is divided into 25 different pieces, scattered in all directions from the village. One plot is more than a mile away.

A map of a farm much like Mr. Raymond's appears on page 102. It is only 15 or 20 steps across some of the smaller fields. Imagine the difficulty of using on these fields farm machinery such as that shown on page 76. The problem is not made any easier by the fact that one farmer may need to cross the fields of several others, in getting to one of his fields.

In Southern Europe

Mediterranean agriculture. In going from northwestern Europe to the lands along the Mediterranean, in southern Europe, there is, as you would expect, a noticeable difference in climate. Each season of the year is warmer in southern Europe than in northwestern Europe. Northwestern Europe has year-round rain. Most of southern Europe has rain chiefly in winter. In the Mediterranean area a kind of farming has developed, which is different enough from other kinds of farming to be called by a special name, *Mediterranean agriculture.*

The two pictures on this page suggest several things which are typical of Mediterranean farming. The vineyard in the top picture is much like thousands of orchards and vineyards in Spain, southern France,

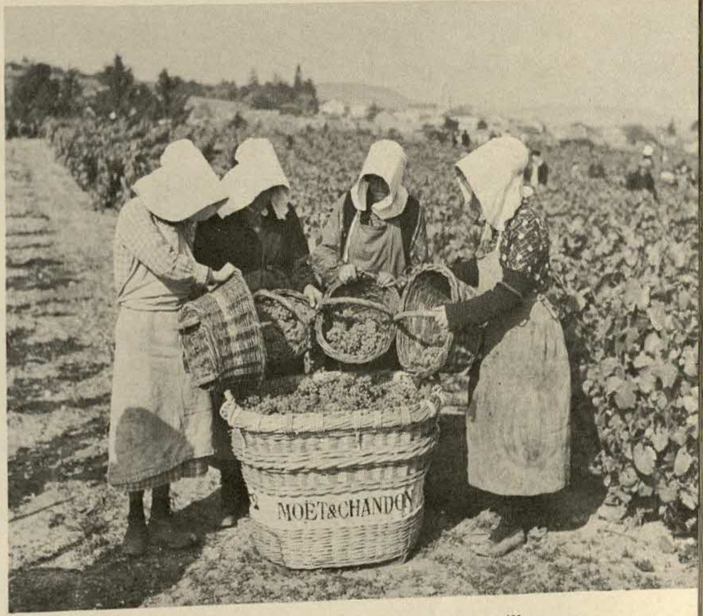
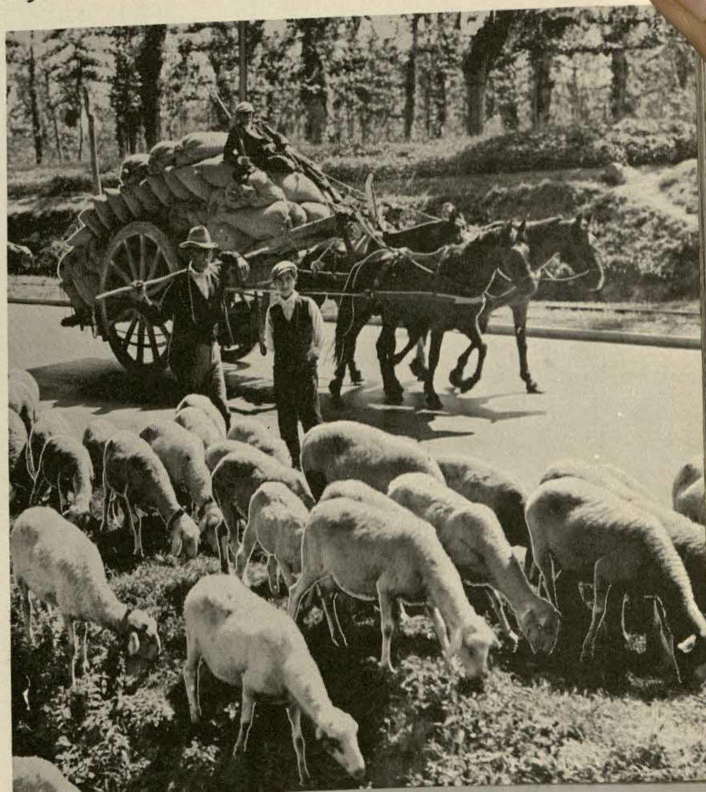


Figure 117. The grape harvest © *Rapho-Guillumette*

Figure 118. A roadside pasture © *Ewing Galloway*



Italy, and Greece. Grapes, olives, and figs can live through a rainless summer and produce their fruit in the autumn. But irrigation is needed for the fine groves of oranges, grapefruit, and lemons. Many of them look like the groves in California and Florida, although much less machinery is used by European fruit growers.

The sheep by the roadside in the picture at the bottom of page 103 (Fig. 118) suggest the kind of livestock most common in Mediterranean lands. Sheep and goats far outnumber other livestock. There are a few dairies near the larger cities, and some farmers use cattle as work animals. But, in general, the mountain pastures are too rough to provide good grazing for cattle.

The cart in the picture (Fig. 118) is loaded with bags of grain. Wheat and barley are the chief grain crops. These crops are well suited to the climate. They can be planted in the autumn, grow well through the mild, rainy winter, and can be harvested in the dry, warm weather of early summer.

There is nothing in these pictures which directly suggests the growing of vegetables commercially. But in southern Europe, truck gardening is outstanding in importance. Every day in winter, freight cars loaded with fresh vegetables move in a steady stream northward from Mediterranean lands.

In Eastern Europe, West of Russia

Eastern Europe differs in kind of climate and kinds of farming from the rest of the continent. Westerly winds from the Atlantic help to keep northwestern Europe from getting extremely hot in summer or extremely cold in winter. These winds have less effect on the temperature, as they move farther and farther from the sea. So the lands of eastern Europe, from Poland to Bulgaria (p. 394), are warmer in summer and colder in winter than are the lands to the west.

Farms are much smaller in eastern Europe than in northwestern Europe. They average less than 15 acres in size. The farmers use less machinery than do those of western Europe, as suggested by the pictures on page 105. Many crops in these two parts of Europe are similar, but in parts of eastern Europe, corn is the chief crop. The hot summers in Hungary and Rumania, for example, are well suited to corn. There are many exceptions, but most farmers in eastern Europe do not make as good a living as do those in northwestern Europe.

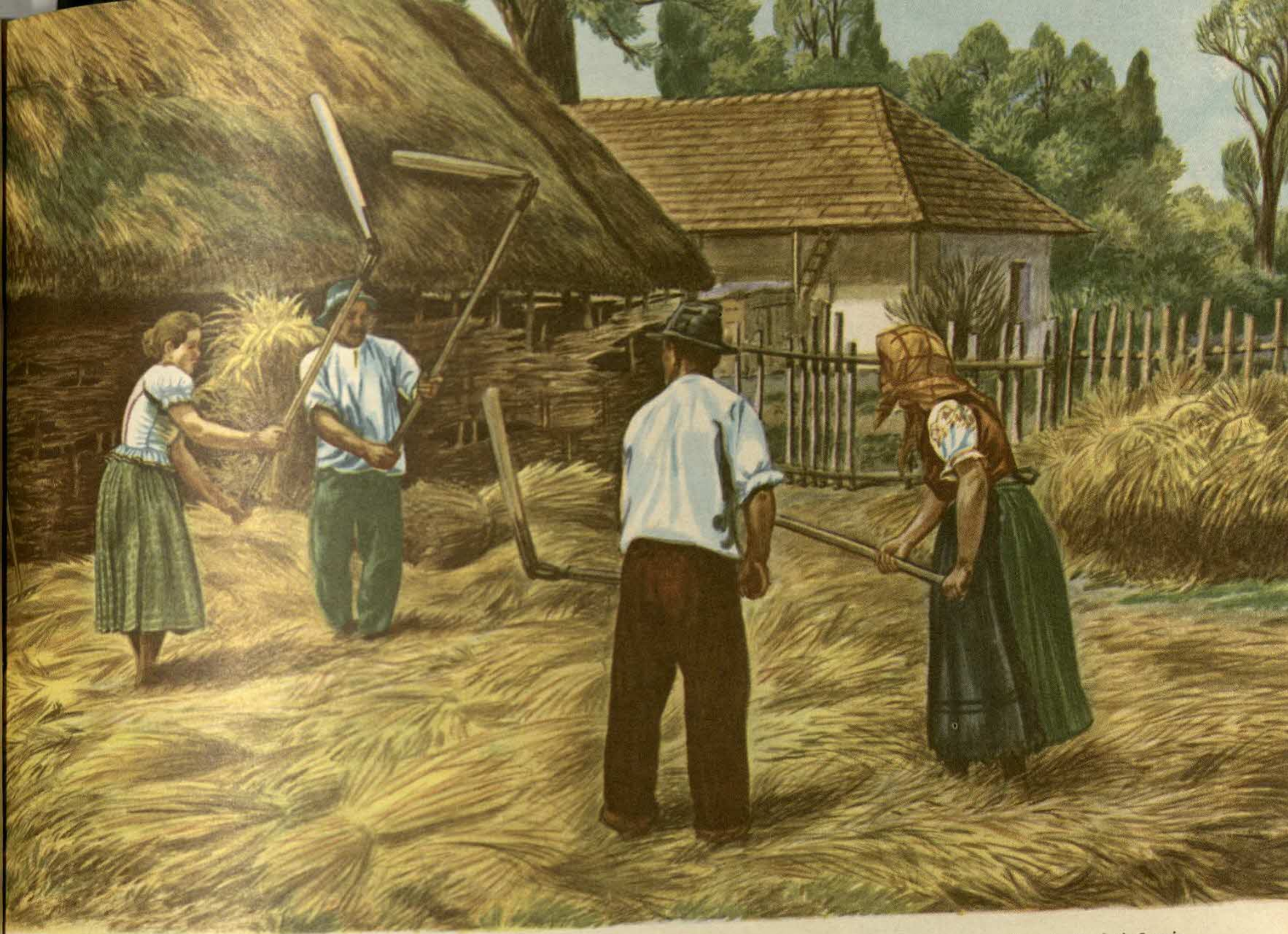
Two farm villages described in the following paragraphs are fairly typical of many farm communities in eastern Europe.

Bukowina, a village in Poland. Near the mountains in southern Poland (p. 394), is the farm village of about 100 homes, called Bukowina. All the farmers live in the village and make daily trips out to their fields and back again. Nearly every farmer's land is divided into many little strips. Each strip has about as much land as a farmer can plow in a single day with two ponies and a light wooden plow. All together, the individual farmer will probably have less than 10 acres of cultivated land.

The plow, the hoe, and the scythe are the chief farm tools. With these, farmers care for their little fields of oats, potatoes, barley, rye, and hay. In addition, each farm family has a garden and certain grazing rights in the nearby mountains for its sheep and cattle.

The hay harvest and the grain harvest are important events. The hay is carefully dried and stored in the barn loft. The sheaves of grain that are to be sold may be carried directly from the field to a market town. The grain kept for use at home is pounded with flails on a threshing floor, as shown in the upper picture on page 105.

Some Polish farmers are considerably more prosperous than those in Bukowina. But hardship is common enough so that it is a familiar saying in Poland that "the months before the harvest are the hungry months."

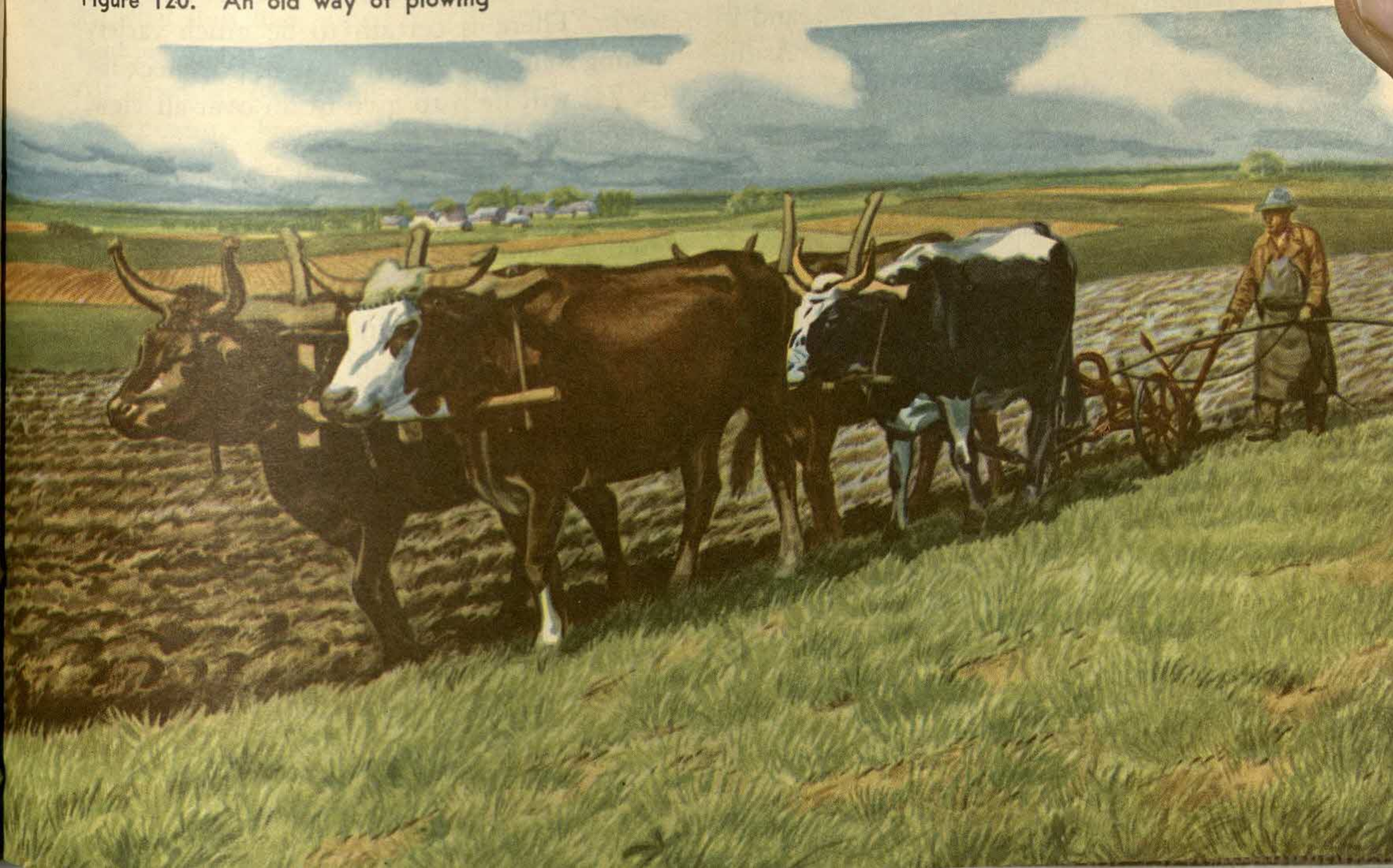


From photo by Frederic Lewis

Figure 119. Hand work at threshing time

From photo by Sawders

Figure 120. An old way of plowing



A village in Rumania. The lower picture on page 105 shows a plowman like those who go out from the farm village of Goica Mica, near the Danube River, west of Bucharest (p. 394). The field in the picture seems large, but it belongs to several farmers who work it together. The individual farmer has no more land than the average farmer of Bukowina.

There is little pasture or livestock in Goica Mica. Nearly all the land is level and is planted to grain, corn one year and wheat the next.

Even in a good year, this village is not very prosperous. And bad years of drought and crop failure come all too frequently. Yet there is some hope of better times, for the level land is rich. It could produce bumper crops. But the good times and the big crops will come only after the farmers plant better seed, take better care of their crops and land, grow bigger gardens, keep more livestock, and perhaps learn more about irrigation.

In Russia

Farm land and farmers. In some ways Russia would seem to have unusual advantages for farming. Farming requires room, and in size Russia is a giant among countries. As the statistics show (pp. 396-400), Russia is the largest nation in the world, more than twice as large as the United States. In these statistics, the full name for Russia is used, Union of Soviet Socialist Republics.

Russia appears to have another advantage for farming. Most of the country is a lowland plain, as shown by the maps on pages 386-387 and 380-381. In millions of square miles there is scarcely a hill that would interfere with farm work.

But Russia has serious handicaps which partly offset the advantages. Cold weather is one of these. Much the greater part of Russia lies farther north than any part of the United States. Notice on the map on pages 376-377 how little of Russia has hot weather in summer. Some crops can grow where summers are not hot. But more than half of Russia is too cold for most crops to grow.

Russia, also, has large areas too dry for farming. As you read in the chapter on Ranching and Herding (pp. 40-51) and as you can see from the rainfall map (pp. 372-373), the dry lands of Asia reach far into the Soviet Union, particularly east of the Caspian Sea.

It is not surprising, then, to discover from the map on pages 72-73 that in most of Russia there are few, if any, farmers. Nearly all the farmers are in one region in the central, western part of the country. This farming region is rather wide near the western boundary. It becomes narrower and narrower to the east. Finally, it is pinched out by the dry lands and the cold lands which almost meet in the middle part of the country.

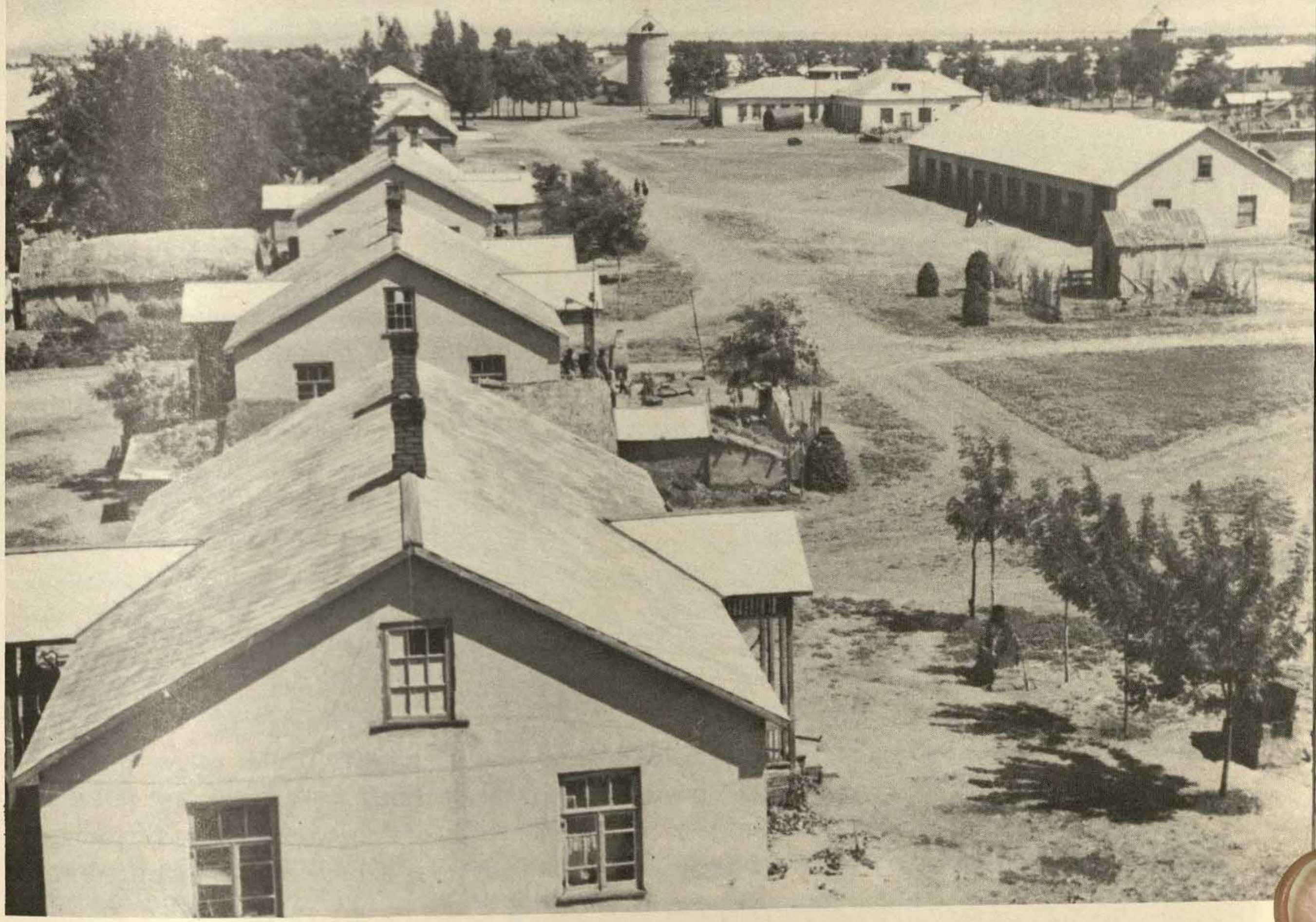
All together, Russian farmers have about the same amount of cultivated land as farmers in the United States. This is plainly shown on the map on pages 384-385. But there are more than 100 million farm people in Russia, about five times as many as in the United States.

The Russian pattern. It is not easy to get a view of the many Russian farmers and their work. There is certain to be much variety among so many. But the use of the check list (p. 74) will help to give us an over-all view, in spite of local differences.

1. *Size.* Most Russian farms are large. The average farm has thousands of acres, including both cultivated land and grazing land. Yet many families live on each one of these farms. So the individual farmer gets his living from less than 50 acres of land.

2. *Farmstead.* Nearly all the farmers live in villages. The size and number of barns, granaries, and sheds may be different in different villages. Few houses have modern conveniences.

3. *Ownership.* Probably this is the most difficult part of Russian farming to understand. After the revolution of 1917, the peasants hoped to divide the large estates into



© *Sovfoto*

Figure 121. A collective farm village in Russia

small farms for themselves. But they did not get what they had hoped for. Instead, all the land became the property of the government. All farming is more or less directed by the government. None of the land really belongs to any farmer.

The government has divided all the farm land into what are called *collective farms* and *state farms*. More than nine out of every ten farmers live on collective farms. The individual farmer cannot choose where he will live. He cannot move freely of his own choice from one farm to another. He works where he is told to work.

On a collective farm, each member is assigned a particular task and gets a share of what is produced. In addition, if land is available, he may have a small garden plot for his own use. He may also have a cow, a pig or two, and some poultry. He is permitted to own his own house, but not the land on which it is built. That land, like the garden plot, the cultivated fields, the pastures, and the forests, belongs to the government.

The picture above shows houses and other buildings that make up a collective farm village. The buildings at the right, including the silos and large barns, belong to the collective organization, not to individual farmers. On this farm, the houses themselves probably belong to the collective.

A state farm in Russia is under the direction of a manager appointed by the government. The work is done by laborers who get regular wages, but receive no share of the crop.

4. *Crops and Livestock.* With few exceptions, crops and livestock are the same as those of western Europe and the United States. In a recent year ten outstanding crops in Russia were wheat, rye, oats, barley, potatoes, flax,

sunflowers, cotton, corn, and sugar beets. The chief livestock are cattle, horses, sheep, pigs, and goats.

Toward the northern, colder side of the chief farming region, rye, oats, potatoes, and flax are leading crops. Farther south, wheat takes first place, largely because of the warmer climate. In the picture below, men are sowing wheat near the Volga River (pp. 386-387). In various oases in the dry lands east of the Caspian Sea, cotton is the main crop.

5. *Methods.* The workers on a collective farm are organized into squads, or brigades, each with a foreman who directs the work. For many kinds of field work the collective farmers do not own machinery or tractors. These are rented as needed from government Machine and Tractor Stations, located throughout the farming area. The tractor and other machinery in the picture below were provided for the farmers in that way.

Half or more of a farmer's time may be spent working for the collective. Nearly all the rest is free time, which he may spend as he wishes. Much of it he will need to spend in cultivating his garden plot and caring for his own livestock, if he has any.

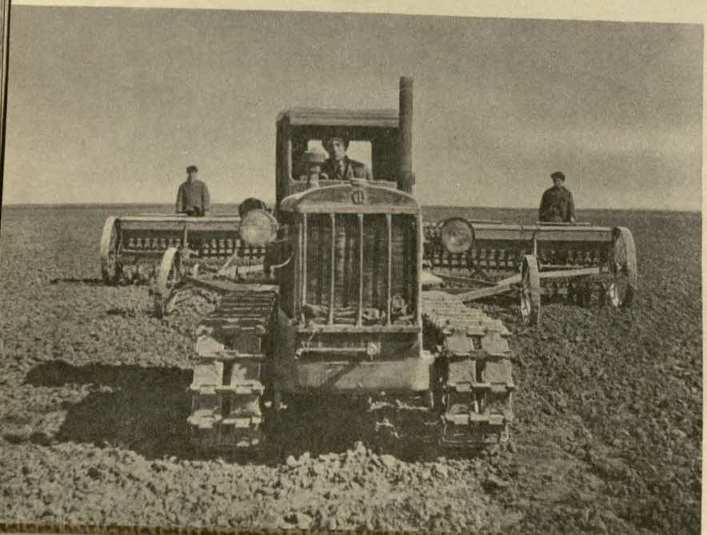
6. *Markets.* Suppose that on a collective wheat farm the grain has been harvested and threshed. What becomes of it?

A part of the grain is given to the Machine and Tractor Station in payment for the use of machinery. Another part of the grain goes to the government at a fixed low price. This is considered a kind of tax. Still other grain is set aside as feed for livestock or for seed. Some grain is sold in order to get money to pay various expenses of the collective farm, including insurance, repairs, and so on.

Finally, the grain that is left, and any income from the sale of surplus grain by the collective, is divided among the farmers. Not everyone gets the same amount. All the tasks on the farm are rated according to difficulty and skill. A skilled tractor driver may get several times as much as a watchman.

The individual farmer can do much as he wishes with his small share of the collective harvest, as he also can with whatever he grows on his garden plot. He may use it at home, or he may sell it in some near-by town market, perhaps to a factory worker. In our country a grain dealer might buy wheat from many different farmers and sell it in a distant city. The work of such a "middleman," as he is called, is not permitted in the Soviet Union. Any surplus to be sold must be taken directly to market by the collective or by the farmer who produced it.

Figure 122. Sowing grain ©*Sovfoto*



Helps in Learning

1. Find Europe on the following five maps: pages 372-373, 374-375, 376-377, 380-381, and 394. After looking at these maps you should expect many differences in farming within Europe. Explain why, referring to each of the five maps.

2. Make a list of differences in farming which you might notice when traveling from Denmark through Germany and France to Italy. Which of these are explained chiefly by differences in climate?

3. Which farmers have been helped more by the Industrial Revolution: the farmers of Helidon, in England, or the farmers of Bukowina, in Poland? Explain your answer.

4. Explain how a shopkeeper in Helidon, England, may depend indirectly on soil resources.

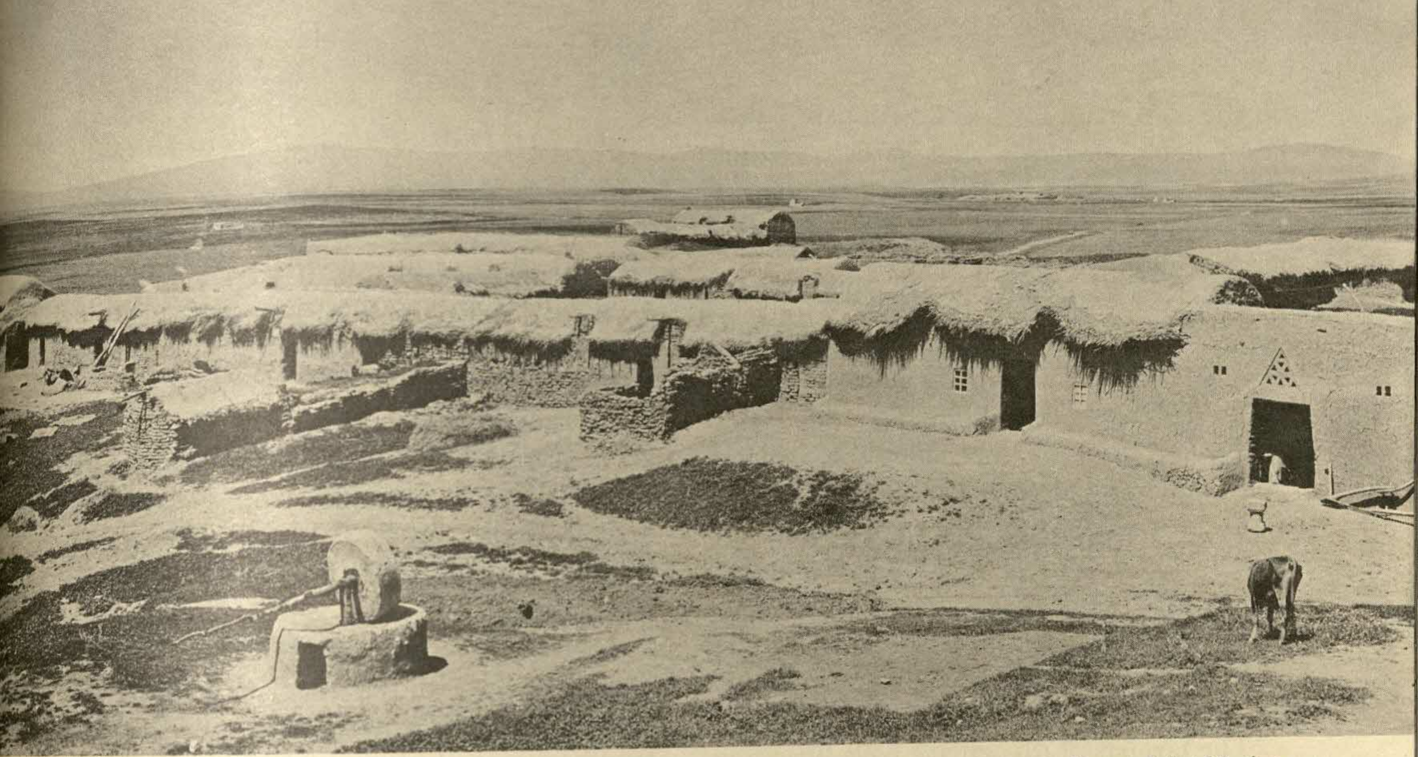


Figure 123. Where rain is scarce

Courtesy Oriental Institute

5. Some European farms are small, some are large. Are the farmers who work the largest farms always the most prosperous, or might there be prosperous farmers on both small and large farms? Illustrate your answer by referring to farms in Europe about which you have read.

6. In what part of Europe is commercial farming more common, in northwestern Europe or in eastern Europe?

7. Tell why a farmer is handicapped by having his land divided into many small pieces, as shown by the map on page 102.

8. Most dairy farms in Europe are in thickly settled areas. Why should we expect this?

9. The map on pages 72-73 shows that there is no farming in the northern part of Russia. How do you explain this?

10. Write a paragraph or two on the subject: "How Farming in Europe Could Be Improved."

11. Copy the list of headings for the check list about farming (pp. 74-75). Then read again about the corn-belt farmer and the dairy farmer in the United States (pp. 75-79). Read, also, about farming in Russia. After each heading in the list write briefly the ways in which farming in the United States and in Russia are alike, or different, as the case may be.

In Southwestern Asia

The Near East. Many years ago the people of western Europe spoke of all of Asia as "the East." The lands of far distant eastern Asia became known as the "Far East." Southwestern Asia, closer to Europe, came to be called the "Near East." And so it is today.

In this book the words Near East refer particularly to the corner of Asia which lies west of India and Pakistan, and south of Russia. Look carefully at the map on pages 386-387 to see which lands are in this area. Twelve are named on the map. Sometimes Egypt also is included as a Near Eastern country.

Where there is little rain. The almost lifeless scene above shows what much of the Near East is like, dry and dreary. As the rainfall map shows (pp. 372-373), this is part of a vast dry belt which reaches from Africa across the heart of Asia. And, as you read on page 49, most of that land is used by herdsmen who move about with their tents and camels and flocks of sheep and goats. Yet the map on pages 72-73 shows that there are places where men grow crops. Some of the squares on the map stand for oases, with date palms, grain fields, orchards, and gardens. Other squares stand for a few places where there is just enough rainfall so that men can grow crops without irrigation.

The farm village in the picture on page 109 is in northern Iraq, north of Baghdad (pp. 386-387). It was almost noon on a summer's day when the photograph was taken. It was hot. Rain had not fallen since spring, and could not be expected again until autumn. To escape the heat, the people had sought shelter in their dark, almost windowless houses. Fortunately the thick walls of mud brick, and roofs of mud and thatch, made it fairly comfortable inside. As evening approaches, the village will come to life again.

The farmers of this village have little livestock. For a living they depend largely on growing wheat and barley without irrigation but with the help of winter showers. In the autumn, they hitch their oxen to simple wooden plows like those leaning against the house on the right. Slowly the fields are plowed and planted. There is a harvest in the spring if the winter rains have not failed. Then comes summer again, with the blazing sun in the cloudless sky.

Some grain is sold, but much is used for food by the farm people themselves. The stone mill in the foreground is used for grinding wheat or barley for food. As men push the long pole, the stone wheel revolves on the larger stone base. The grain is crushed as the stone wheel rolls over it.

Elsewhere in the Near East there are many other farm villages like this one, where people depend on uncertain showers for small crops of grain. There are also many towns and villages in the oases, where water for crops comes from wells or streams. Naturally ways of farming in the oases differ somewhat from dry-land farming. But throughout these lands, farmers have one thing in common. They are concerned about getting water for their crops so they can make a living from the soil.

In the India-Pakistan Peninsula

Much land, many farmers. For centuries the name India has stood for a vast land in southern Asia, reaching from the Himalaya Mountains south to the tip of a great peninsula that reaches far out into the Indian Ocean (pp. 386-387). At various times the land has been divided in different ways. For many years it was part of the British Empire. After the British withdrew from the area, following World War II, two new political divisions were set up: Pakistan and the Republic of India (pp. 386-387).

A glance at the map of cultivated lands, pages 384-385, shows that in farming the India-Pakistan peninsula is one of the "big four" regions of the world (pp. 73-74). In fact, the peninsula has about as much cultivated land as there is in the United States. But in the peninsula there are about 10 times as many farmers as in the United States. Already you can guess something about the size of farms in the peninsula.

A monsoon land. Probably every farmer in the India-Pakistan peninsula knows about the monsoon winds of southern and eastern Asia. Most farmers must keep them in mind in planning their crops and their work.

These winds of southern and eastern Asia change with the seasons. In summer, they are wet winds, blowing from the sea to the land. In winter, they are dry winds, blowing from the land to the sea. Vast areas in the peninsula are almost rainless in winter but are deluged with rain in summer.

There are really three seasons in the peninsula—the cool, the hot, and the wet. The cool season begins in October and ends in February. During that time the bright, sunny days may be pleasantly warm, but the nights are chilly in most of the land. Light frost is common in the northern part of the peninsula.

In March the hot season begins. Each day the sun climbs higher and higher in the cloudless sky. The dust lies thick on an almost lifeless landscape. Almost everything is either brown or gray. All through the cool and the hot seasons, the monsoon winds blow from the land to the sea.

In June, generally, the winds turn about. The summer monsoon brings rain. One downpour follows another. Now the landscape is green and bright, alive with growing things. But the air is so moist that people may need to build fires to dry their clothes, in spite of the heat. Such are the striking changes that go with the three seasons in the peninsula.

How irrigation helps. In some years the summer monsoon comes late; in others, it may come early. Sometimes the rains are light. Years of heavy rainfall may be followed by years of drought. In the northwestern part of the peninsula the rainfall is always light in summer as well as in winter (pp. 372-373). With these differences in rainfall, it is not surprising, then, that farmers in the peninsula depend much on irrigation, in spite of the summer monsoon.

The picture on this page shows one of many methods of irrigation, using a kind of seesaw pump. One end of a long thick pole reaches into the top of an open well. Attached to it is a slender pole with a bucket on the end of it. The man standing at the edge of the well sees to it that this bucket is filled with water. Then the two other men walk out toward the opposite end of the thick pole, steadying themselves with the slender poles which they hold. The weight of the two men lifts the bucket from the well. The bucket is emptied into a ditch that leads to the fields in the distance, and the men prepare for another seesaw.

Water is lifted from wells by other methods, also. One very familiar scene is that of a team of oxen at the end of a long rope, pulling huge buckets of water from a well. The rope goes over a pulley and reaches perhaps 50 feet to the bottom of the well. Whatever method is used, irrigation from wells is very important in the India-Pakistan peninsula.

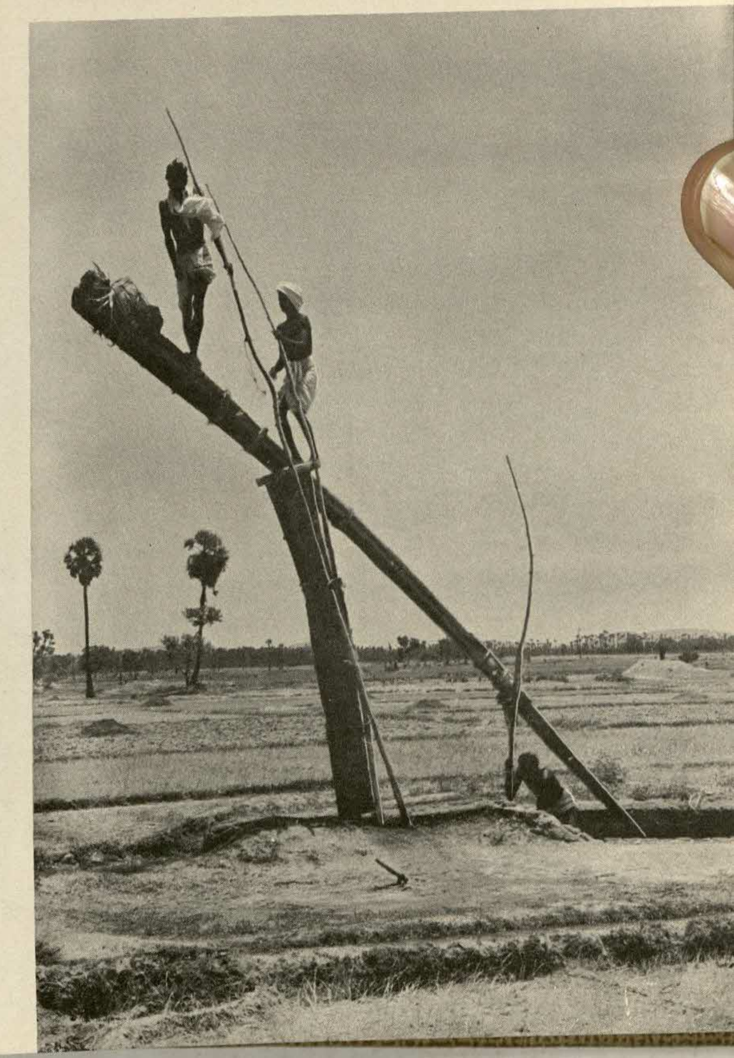
Two other kinds of irrigation also are common in the peninsula, irrigation from rivers and from tanks. The most famous river irrigation is in the dry northwestern part. There the waters of the Indus River are led off in canals across the plains, making a garden out of a desert. In the peninsula as a whole, there are at least 75,000 miles of modern irrigation canals. No other region has so many.

In India and Pakistan, the word *tank* really means what we would call a pond. A mud wall is built across a small valley so that during the summer monsoon, rain water will collect in a large pond. This water is then used during the dry season, perhaps for household use as well as for irrigating the fields.

All together about one-fifth of the cultivated land in the peninsula is irrigated. The following stories show how much irrigation,

Figure 124. Getting water for the land

© *Ewing Galloway*



as well as many other things, may vary from place to place.

Pachperwa, a typical farm village. The village of Pachperwa lies in the middle part of the Ganges valley, far upstream from Calcutta (pp. 386-387). More than a hundred farm families live there. It is called a village of 64 plows, the number of plows that the villagers own. These farmers care for the amazing total of more than 6000 fields which surround the village. Yet so tiny is each field that together the fields total only 745 acres, less than one and a quarter square miles. The average farmer, then, has only about six acres of land, which are divided perhaps into 50 pieces.

Many different crops are grown in these thousands of fields, but rice is the chief crop and the chief food. The fields are plowed as soon as possible after the rains come, though sometimes the men and oxen must splash through water which is waist-deep in the fields. Later the rice is planted and transplanted, weeded, harvested, and carried to the village. Finally it is threshing time, as illustrated by the upper picture on the facing page. Oxen trample the grain to separate the kernels from the straw.

There are two harvest times in Pachperwa. In autumn the farmers harvest crops, such as rice, which need the rain and heat of summer. In spring, farmers harvest wheat, barley, and similar crops, which can be planted in the fall while the ground is still damp and which will grow during the cool, dry winter. This second crop is enormously important in a place like India, where there are many people and little land for each. A second crop means more food for each farm family.

There is little irrigation in Pachperwa. A farmer who happens to have fields close to a river may dig a simple ditch from the river to his fields. He may dig a well and with much labor dip out the water for his crops. But, in general, it is so difficult and so costly for farmers in Pachperwa to irrigate their fields that most of them depend only on rainfall for their crops.

The average farmer in Pachperwa, as in the rest of India, is desperately poor. He probably is a renter, not a landowner. His barn is only a hut which shelters his oxen. His tools are crude and simple, perhaps only a wooden plow, a spade, a clod crusher, a sickle, a piece of rope, and little else. All together, they are not worth more than ten or fifteen dollars. Rarely can he save any grain or money from one year to the next. So one crop failure may mean starvation.

Other farmers, other crops. The lower picture is another familiar scene in India, particularly on the hill lands and plateau of the peninsula (pp. 380-381). These farm people, men and women, are harvesting a kind of grain sorghum. Rice, wheat, and various kinds of sorghums are the outstanding food crops in India and Pakistan. Other crops include sugar cane, barley, peanuts, tea, coconuts, and many more.

It is so important to gather every possible kernel of grain that many farmers set guards in their fields as soon as the grain begins to ripen. These guards may be boys or girls who stand on temporary platforms. They soon learn to throw stones or shout loudly to frighten away birds and small animals that would steal the grain which the people so desperately need for food.

The farmers of the India-Pakistan peninsula also grow large quantities of jute and cotton. Rough, coarse materials, such as burlap, can be made from the jute fiber. Cotton, as you know, is used for many different things.

Cotton is a leading money crop on the plateau east of Bombay (pp. 386-387). Farmers plow and plant their fields soon after the summer monsoon rains come. Some farmers irrigate their land from tanks, wells, or small streams. The cotton ripens in midwinter, when the clear weather is perfect for picking cotton. Only in the United States is more cotton produced than in India and Pakistan.

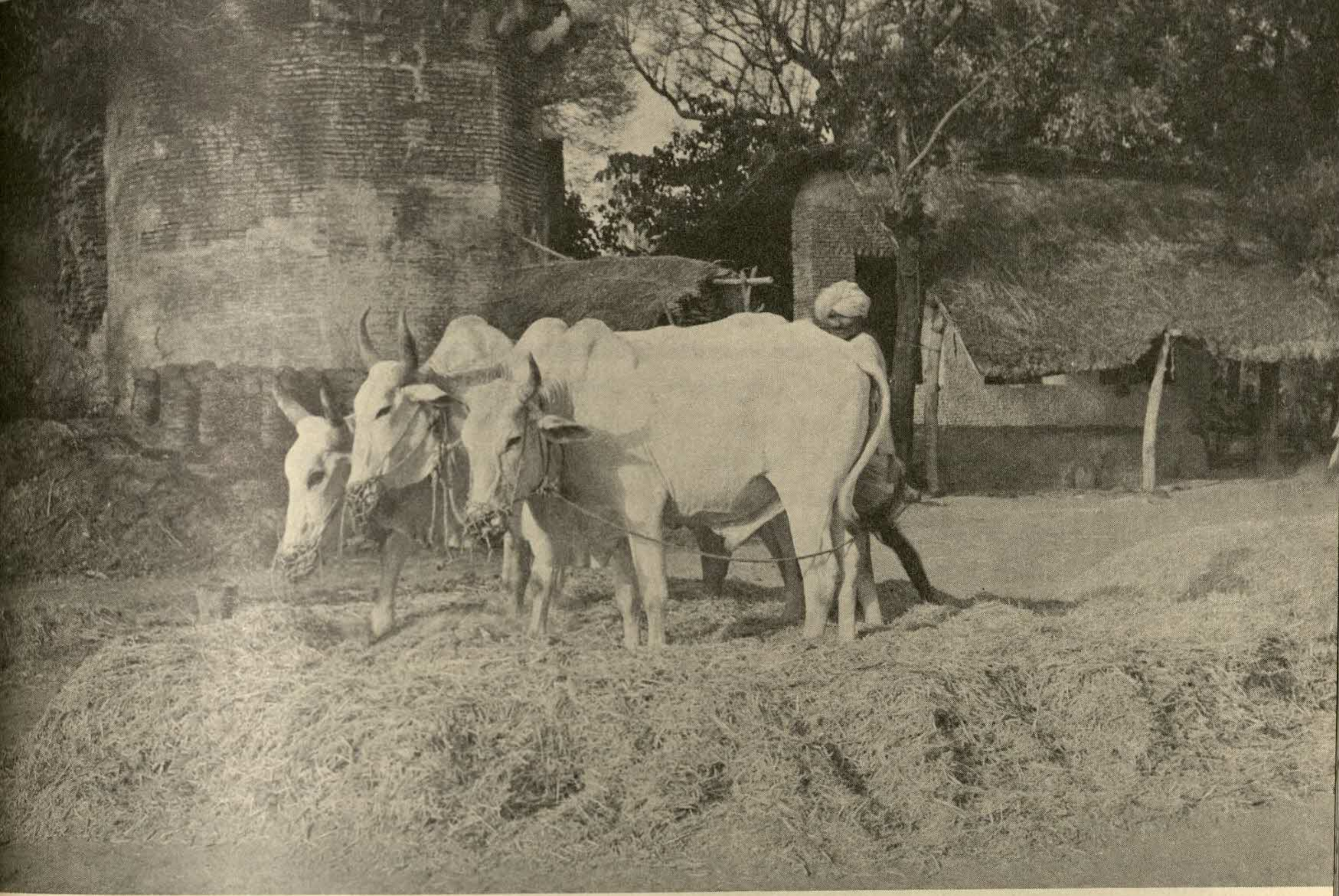
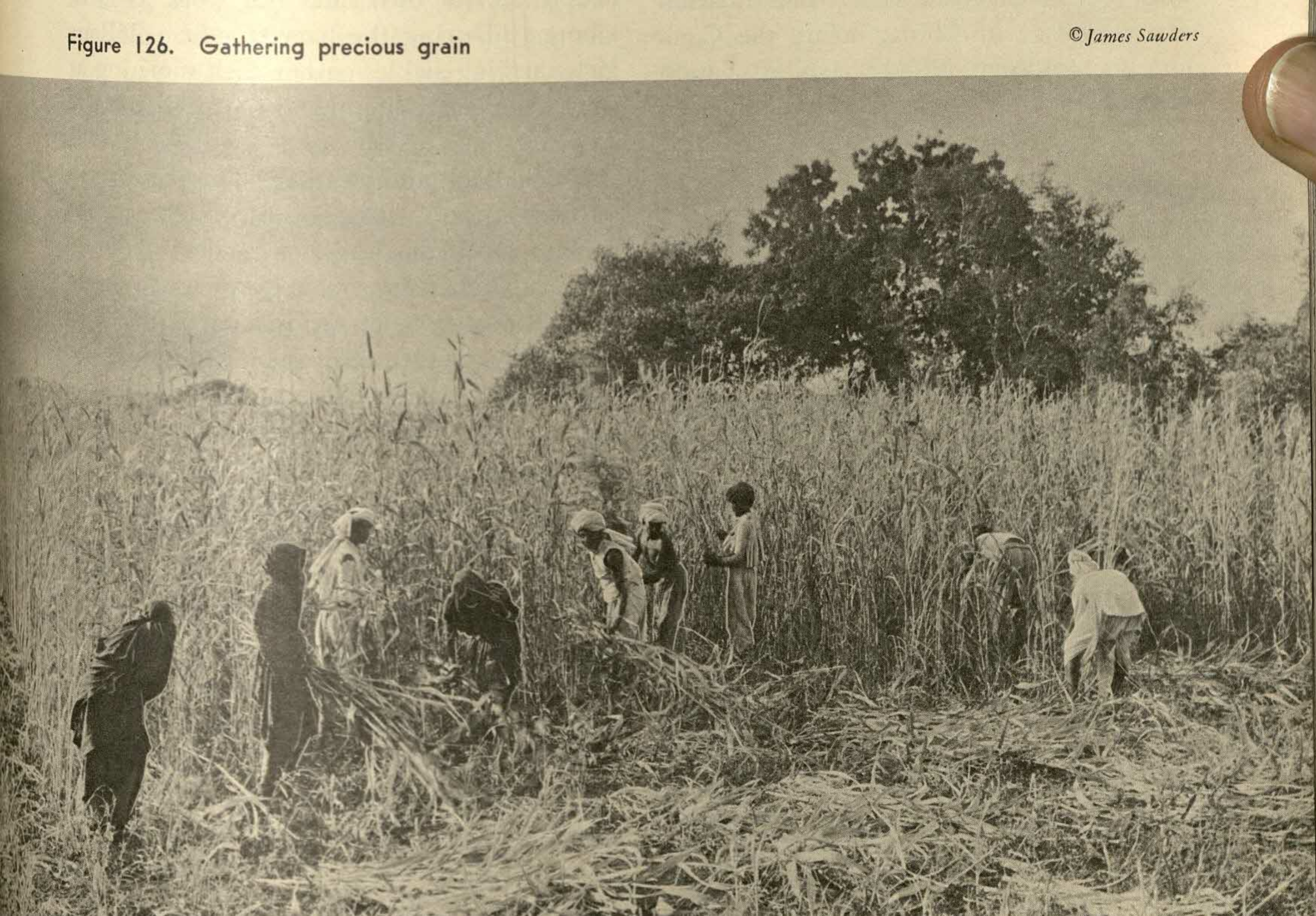


Figure 125. After the harvest comes threshing time © Ewing Galloway

Figure 126. Gathering precious grain © James Sawders



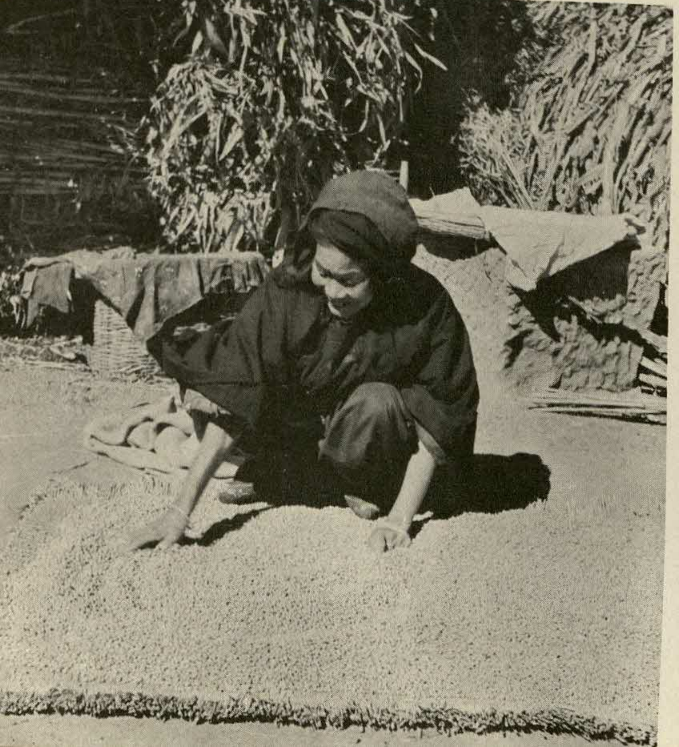
In the Far East

The fourth of the "big four." Of the four great farming regions of the world, as you will recall, one is in the United States, another in western Europe and Russia, and a third in India-Pakistan. The fourth of these great regions is in China, in the Far East. One-third of the world's farmers live there.

A land of many lands. The Far East, south of Russia and east of the India-Pakistan peninsula, is a land of many lands. In places men seem to have made little progress in clearing the forest and settling the land. In other places the land has been crowded with human beings for many centuries.

It would be natural, then, to expect many differences in farming. Some differences are related to government. For example, a Communist government has gained control of the mainland of China. They have changed many things, including land ownership in some areas, but the basic crops and methods of work remain much the same. The situation in one village in China, before the Communists took over, is rather typical of most of the Far East, in spite of political changes.

Figure 127. Drying beans © *Black Star*



A farm village in China. The little village of Luts'un lies in a narrow valley in southeastern China, west and a little north of Canton (pp. 386-387). Within the village there are 122 households. The houses stand close together on the valley floor. Near-by are the garden-sized fields, and beyond the fields are the steep slopes of the hills.

All except four households in Luts'un depend on farming for part or all of their living. A list of village workers, besides farmers, includes three grocers, three carpenters, three bean-curd makers, two blacksmiths, a priest, a fortuneteller, a butcher, a medicine man, and a schoolteacher. But nearly all of these, including the schoolteacher, either own some land or work part time on someone else's land.

The total amount of land belonging to the village is about 140 acres. This means that each household has, on the average, only a little more than one acre. But the land is not evenly distributed among the villagers. Some people do not own land but work as farm laborers. During the harvest season, village girls carrying sickles gather each morning at the village gate, hoping to be hired for the day.

Crops, land, and weather. The pictures in Figures 127 and 128 tell of the two chief crops in Luts'un—beans and rice. In many of the fields two different crops are grown in a single year. Rice may be grown in a particular field from May to October; then beans may be grown in the same field from November to April. This double cropping is a great advantage where farm land is as scarce as it is in Luts'un.

The story of *Land, Weather, and the Farmer* (pp. 60-71) might be illustrated within the Luts'un community alone. Along several small streams there are little patches of sandy *soil*, not well suited either to rice or beans. There corn and other crops are grown. The rough, hilly *surface* of the land surrounding the valley does not permit the use of much land for farming. Nearly all the cultivated fields are on the almost level floor of the valley.

Rice is planted in seedbeds, and then transplanted to the fields as early in the spring as the *temperature* will permit. Southern China is a monsoon land (p. 110), with heavy *rainfall* in summer and little rainfall in winter. So during the summer, at Luts'un, there is an abundant supply of water for the rice crop. The rice is harvested and threshed in October, when there is little danger of damage from heavy rains. Beans can stand the dry, cool weather of winter. They are harvested in April, which is also a good time for drying beans, as shown in Figure 127.

Farm work and farm income. A few years ago a Chinese teacher made a list of the various kinds of work done by the farmers of Luts'un, together with the tools or methods used in the work. The following items are included in the list: sowing rice *(hand),* collecting and threshing beans *(sickle and beater),* breaking soil *(hoe),* irrigating and mending dikes *(hand and hoe),* plowing *(animal and plow),* transplanting rice *(hand),* weeding *(hand),* reaping *(sickle),* threshing *(threshing box),* transporting grain *(carrying pole).* Every task except plowing was done by hand. The Industrial Revolution had not changed either the tools or the methods of work of the farmers of Luts'un.

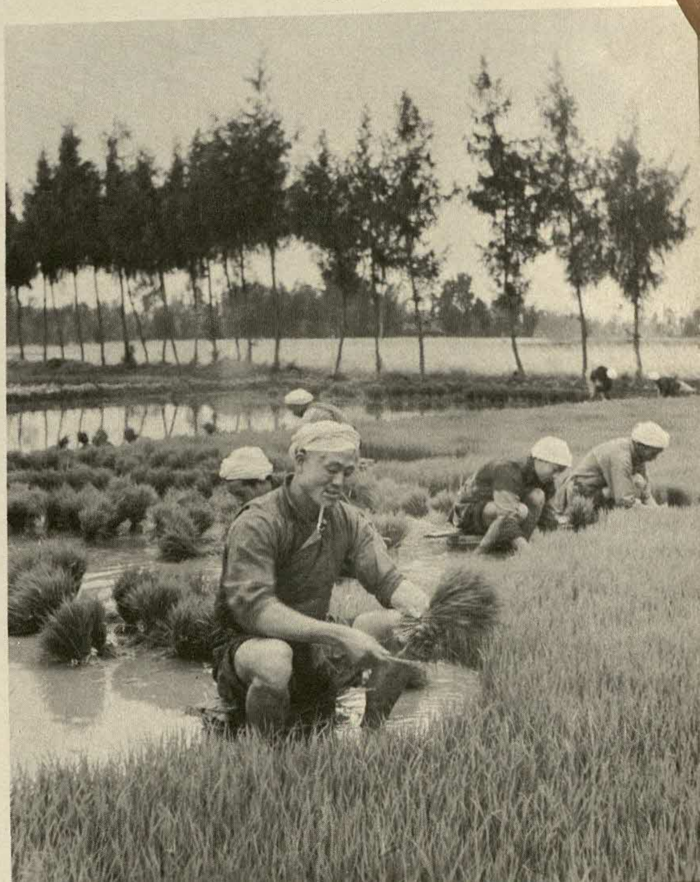
Working in this way, a farmer's income is small. In addition to his crops of rice and beans, he may harvest small amounts of other grains, such as corn or wheat. Next to his house he may have a few rows of vegetables. At most times he keeps some poultry and two or three pigs, which are fed bean stalks and the outer layers of rice kernels. But most of the products which he gets in these ways are needed simply to keep his family alive. There is little left over to buy firewood, clothing, or tools, to pay taxes, or to buy gifts for weddings and funerals. Naturally, therefore, the farm family has little chance to enjoy even the most simple luxuries, such as toys or candy. Farming in Luts'un is close to the subsistence level.

Other farmers and other farms. Luts'un is only one of many thousands of farm villages in China. North, south, east, and west of it, there are other villages where other men struggle equally as hard to make a living from the soil. The crops in their fields vary, as the land, the climate, the local customs, and other local conditions vary.

Throughout southern China, irrigated rice is the great summer crop, followed by wheat, barley, or perhaps beans in winter. Tea grows on many hillsides, and sweet potatoes are raised in nearly every garden. In most of northern China it is too cold for a second crop in winter, and summers are too short or too dry for good crops of rice. Wheat, millet, soybeans, and other crops are raised rather than rice. Cotton is a cash crop in many parts of the country.

These differences in crops must not hide the fact that farming, as a way of life, is re-

Figure 128. Transplanting rice seedlings
Courtesy Chinese News Service



markably similar in all parts of China. In fact, many of the similarities reach far beyond the borders of the country to other lands in the Far East—Korea, Japan, and the peninsulas and islands of southeastern Asia.

Plantation farming in tropical regions. In Indonesia, Malaya, Borneo (pages 386-387, 391), and other tropical sections of the Far East, many great plantations have developed, particularly since the Industrial Revolution. Most of the money used for developing these plantations has come from the outside world, much of it from Europe. The plantations have grown in number, as transportation has improved and as the demand for tropical products has become greater and greater.

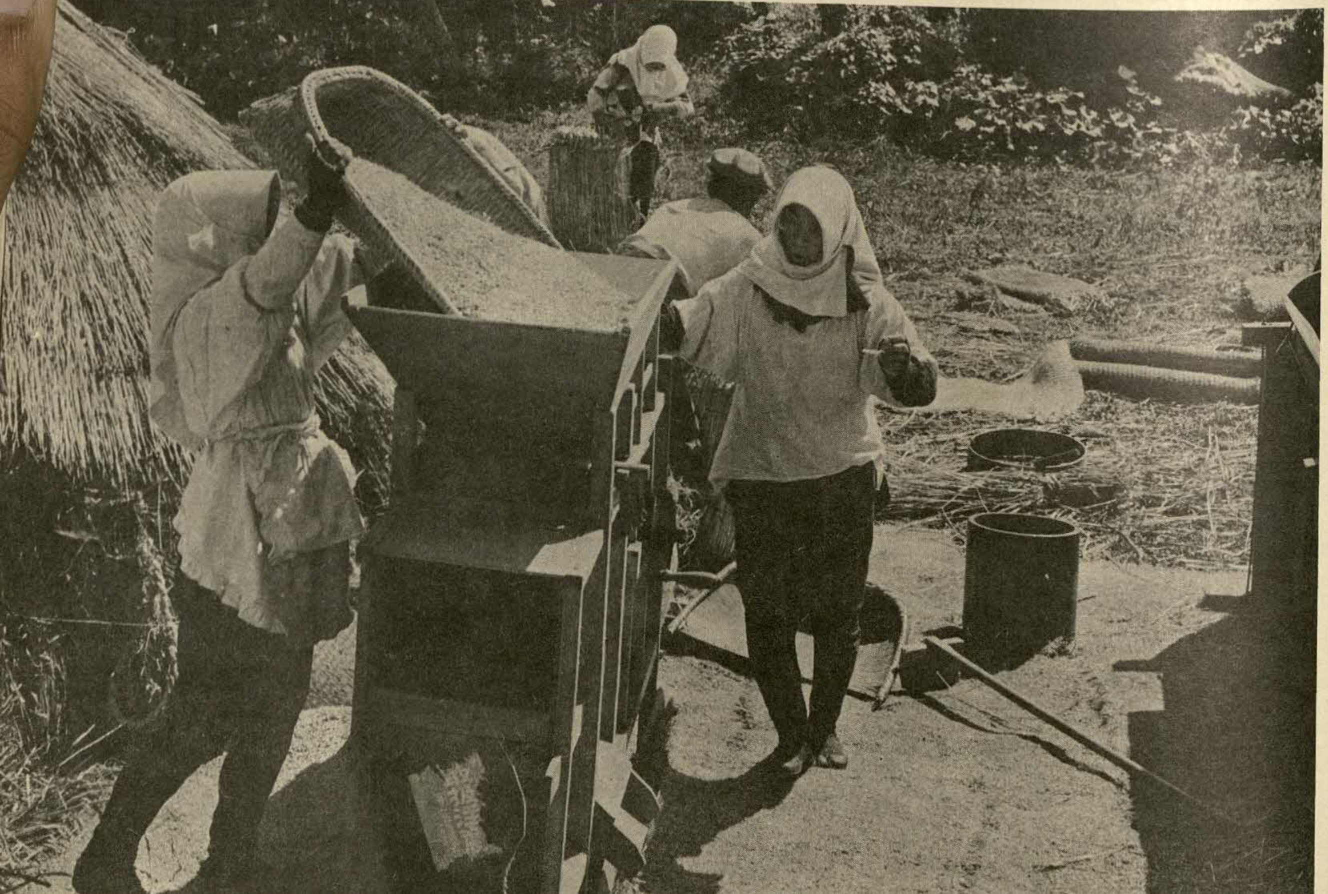
Although they are on the opposite side of the world, these plantations are much like those in Middle America and South America, described on pages 90-91, 93-94. In the American tropics, bananas, coffee, and cacao are the chief crops. In the Far East, plantation farmers as a group grow tea, rubber, coconuts, hemp, and many other crops, in addition to sugar and coffee. In both areas plantation farming is done on a big scale. Huge amounts of money are invested in land and equipment. Hundreds or even thousands of laborers may be employed on a single plantation. And ship after ship sails to Europe, the United States, or other parts of the world with the products of the tropics.

The value of the exports from these plantations is great, but the number of people engaged in plantation farming is comparatively small. The great masses of farm people in the Far East are not plantation laborers. They are "small farmers," near the subsistence level, much like the farmers of Luts'un.

Moving forward. You can see clearly now that the farmers of the Far East have lagged somewhat behind those in many lands. But they are not standing still. Here and there, men are learning about new crops and new

Figure 129. A simple farm machine

© *Three Lions*



ways of caring for the old, familiar crops. A few new machines are coming into use. For example, the machine for cleaning grain, shown on page 116, is a simple and inexpensive machine, turned by hand. But it provides a far better way of cleaning grain than that shown on page 113. From such simple beginnings a new kind of farming and a new way of life may take shape, in time, in the Far East.

Helps in Learning

1. Make a list of at least seven countries in the Near East. Turn to the map on pages 72-73 and name two Near Eastern countries in which there seems to be little farming.

2. How does the picture on page 109 suggest that the village is in a land where there is little rain?

3. Tell why many farmers in India plan their work with regard to the monsoon winds.

4. Do farmers or other workers in your community consider the weather in planning their work? Tell how.

5. On page 84 you read of irrigation in a part of the United States. How does this method of irrigation differ from that in Pachperwa?

6. Why should you expect that farmers in the India-Pakistan peninsula and in China would buy little of what is made in the world's factories?

7. Make a list of six important crops in India-Pakistan and China. Which of them are grown in the United States, also? In what way does farming in the United States differ most from farming in India-Pakistan and China: in the kinds of crops grown or in the methods of growing and harvesting them? Explain your answer.

8. Copy the headings of the check list on page 74. Then read again about Luts'un. Make such notes as you can for each heading, based on what you have read.

9. Which are more dependent on the outside world: subsistence farmers or commercial farmers? Why?

10. Is plantation farming *subsistence* farming, or is it *commercial* farming? Why?

11. Make a list of at least eight products used in your home that may have come from farms or plantations in the Far East. What does this tell about the interdependence of people?

Farmers of Africa

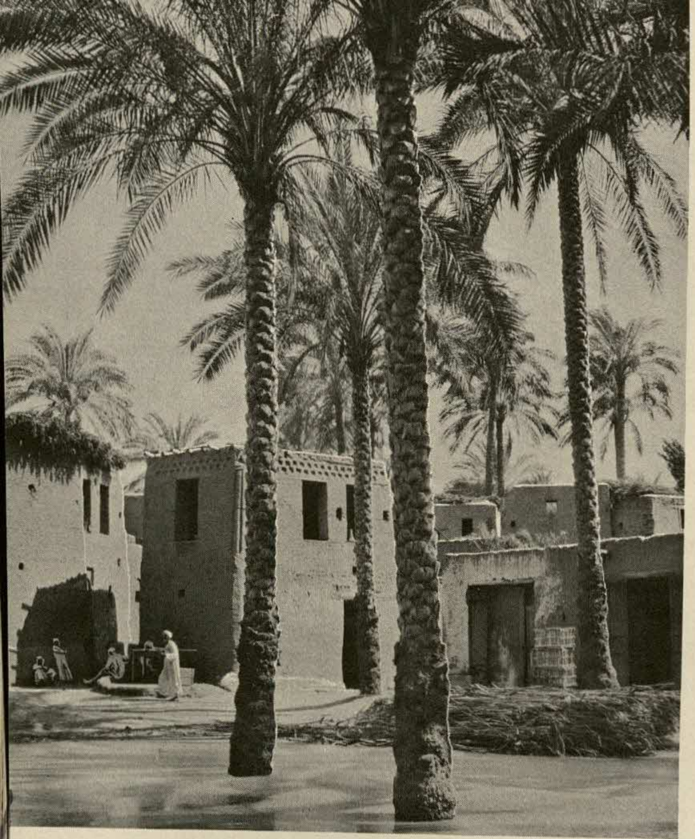
Few and separated. In about half of Africa, there are scarcely any farmers, as you can see by the map on pages 72-73. Lack of rainfall is the chief reason for this. A great desert—the Sahara—fills most of the northern half of the continent. In southwestern Africa there is another great desert, known as the Kalahari (p. 390).

These two deserts help to divide the African farmers into separate groups. There is in Africa no great farming region comparable to any one of the "big four" farming regions that you have read about.

In northwestern Africa. It is sometimes said that Europe ends at the northern border of the Sahara, not at the Mediterranean coast. This is another way of saying that northwestern Africa resembles Europe more closely than it does the rest of Africa. As far as farming is concerned, this is true.

The farmers of northwestern Africa call to their oxen in Arabic. Their long robes might attract attention on a street in southern France. Most of their customs resemble those of the Near East more than those of Europe. Yet these farmers use the land in much the same way as do the farmers in southern Europe.

If the story of Mediterranean farming (pp. 103-104) were repeated for northwestern Africa, few changes would be necessary. Olive orchards, for example, cover many of the low



© *Ewing Galloway*

Figure 130. Date palms in an oasis village

hills at the base of the Atlas Mountains (p. 390). Arab shepherds are concerned about pasture for their sheep and goats during the hot, dry summer. Green fields of wheat and barley, near Algiers, turn yellow and gold in the early summer. Arab farmers, like the farmers of southern Europe, grow fine crops of fruits and vegetables.

Oases in the Sahara. As you know, the Sahara is a vast grazing land, one of the largest on the earth (p. 49). Yet here and there, at oases within the desert, men do make a living by farming. Most of these regions are small, far too small to be shown on the farming map (pp. 72-73). One great oasis, the valley of the Nile, does show clearly on the map. In this river valley, there are millions of farm people who depend on the life-giving water that flows out over the land.

The great cash crop of the Nile oasis is cotton. At picking time it is common to see long lines of camels moving slowly along the narrow roads of the delta, each camel carrying a load of cotton that looks almost as big as the animal. Other crops, providing food for man or beast, include wheat, corn, barley, millet, rice, dates, vegetables, and clover.

The date, fruit of the date palm, is the single great crop in almost every oasis west of the Nile and east of the Atlantic. Several date palms are shown in Figure 130. The date is widely used as food in many parts of the world. The branches of the palm can be used as building material, the leaves for making baskets or mats, and any part of the tree for fuel. One occasionally sees vegetables or wheat or barley growing underneath the trees. But to the oasis farmer these are second in importance to the precious date palm.

Date farmers have much work to do and many problems to face. The soil must be cultivated frequently. The amount of irrigation must be carefully regulated, lest the trees get too little or too much water. Branches are trimmed off from time to time. Men must climb the tall trees to pick the dates. Meanwhile, there is always the danger of damage from strong winds or insects. Sand drifting in from the open desert may choke the trees. It is not impossible for wells to go dry. When that happens, of course, the entire community must move away.

South of the Sahara. There is a land of greater rainfall south of the Sahara (pp. 372-373). Here the natural grass grows thick and tall, wherever plows and hoes have not disturbed it. In some places there are scattered trees which dot the landscape, making it look somewhat like an open park. There is some herding in this area, but in many places farming is more important than herding.

The picture on page 119 shows one of the many farm villages that lie just south of the Sahara. The farmers are Negroes, for in moving southward from the desert, we have moved from Arab Africa to Negro Africa. These farmers have used reeds and grasses, as well as branches of trees, in building the circular granary in the foreground. In it they store

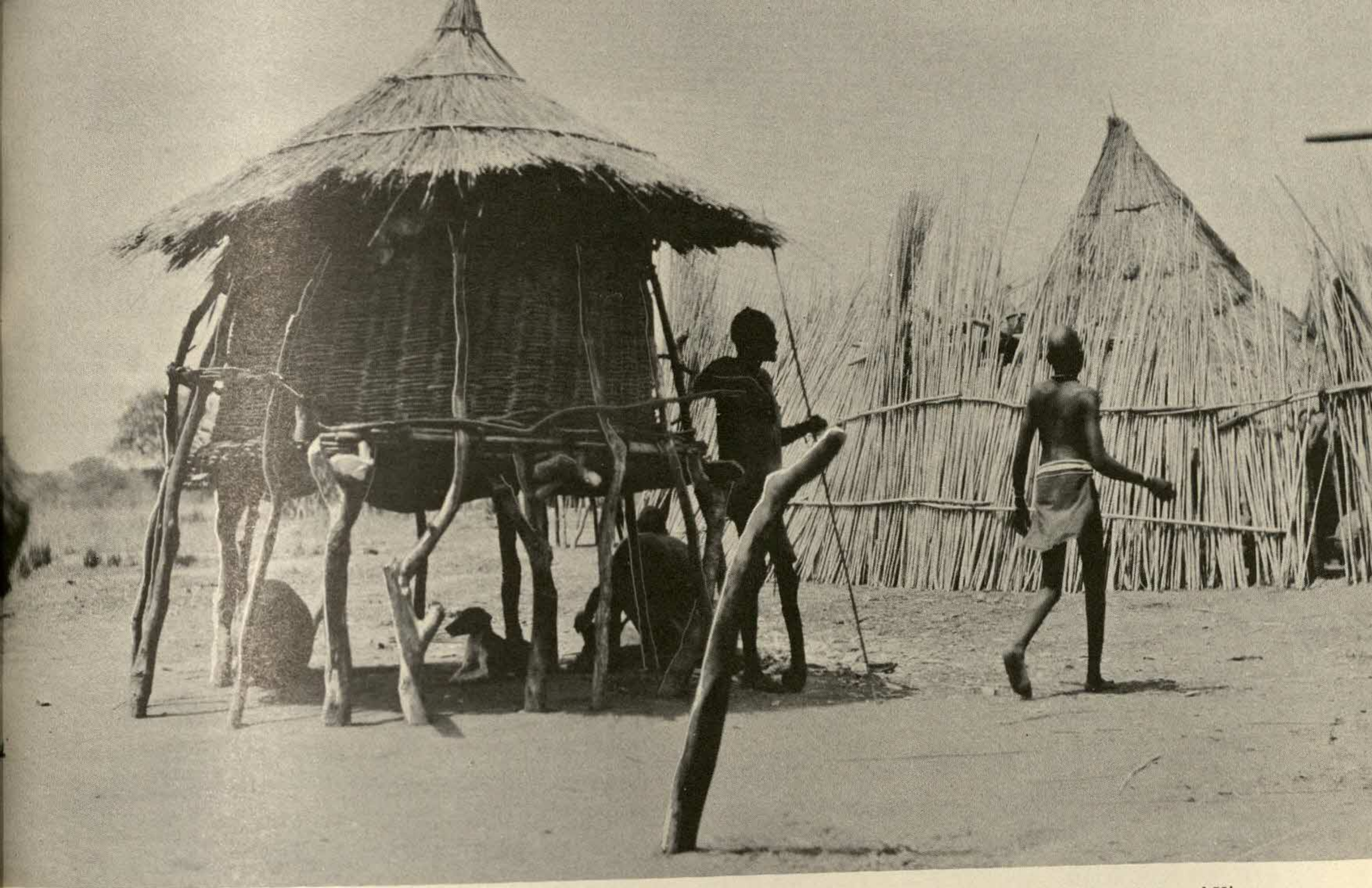


Figure 131. Near the edge of the desert

Courtesy American Museum of Natural History

their surplus grain, probably millet, hoping there will be enough to last until the next harvest. The granary is built well off the ground to protect the grain from insects and from dampness. The farm homes are beyond the tall reed fence.

Farther south, in central and western Africa, grasslands gradually give way to dense tropical forests. This change corresponds to a change in rainfall. The rainfall along the southern edge of the Sahara is scarcely 20 inches a year. Near the equator it is between 60 and 80 inches a year (pp. 372-373). The following story of two groups of farmers in Nigeria (pp. 72-73 and 390) shows several ways in which farm work is related to this difference in rainfall.

North and south in tropical Nigeria. The Hausa are a farm people in northern Nigeria. Their homes and granaries are somewhat like those shown above. Hausa farmers own little livestock except donkeys and goats. Their chief food crops are grains, particularly millet and a kind of sorghum, both of which will grow in a land of light rainfall. The Hausa eat grain in some form at almost every meal. One very common dish is millet pudding, flavored with fruit juice.

The Hausa, also, grow food crops such as beans, peas, pumpkins, corn, and sweet potatoes. Peanuts and cotton are the outstanding cash crops. All of these crops may be grown during the rainy summer. Winters are not cold, but they are almost rainless.

The Hausa do nearly all their field work by hand. They use hoes rather than plows.

The village of Umor in southern Nigeria resembles many others in that part of the country. A thick forest surrounds the village. The average farm family has seven or eight acres of land, but uses less than two acres each year. As the soil wears out quickly, a field is used for only a year or two; then it is permitted to rest for four or five years. In the

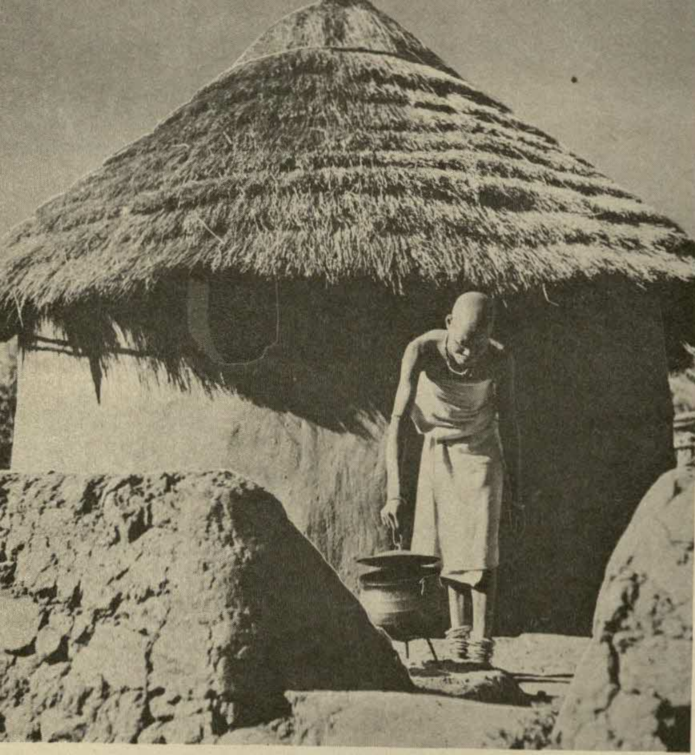


Figure 132. Outside the kitchen ©*Three Lions*

meantime it grows up in a thick jungle, 20 or 30 feet high.

The farming year begins in January, with the clearing of the new fields planned for cultivation that season. The men of Umor, working together in groups, do this work. Nearly all the other field work is done by the women. They plant yams, the chief food crop, and also corn, beans, pumpkins, cassava, and other crops which are suited to the continuously warm weather and heavy rains. The fields are weeded several times. The harvest lasts from July to December, as one crop after another ripens. As the weather is never cold, some farmers grow bananas, coconuts, and other fruits around their houses and along the paths to the fields.

While the women of Umor are busy in the fields, many of the men are at work in the forests gathering the fruit of the oil palm.

In this one village, then, farming and forest work go on, side by side. Some of the women of Umor sell a little surplus food in the village market, from time to time. The village has a more important cash income, though not large, from the sale of palm kernels and palm oil, both products of the oil palm.

In other parts of tropical Africa. In spite of differences, the Hausa farmers and the farmers of Umor are typical in several ways of most of the farmers who live in Africa between the Tropic of Cancer and the Tropic of Capricorn. Their farms are small and their village homes are poor. They have little livestock and only the simplest farm tools. Growing food crops is of first importance, although nearly every farm family has something to sell for cash.

Most of the farmers within the tropics of eastern Africa live on a plateau, which is less rainy and slightly cooler than the lowlands to the west, near the equator. Yet, on the plateau, most of the same crops are grown as in Nigeria. On the whole, the kind of farming is very similar.

In scattered parts of tropical Africa, Europeans have established plantations, where cacao, cotton, coffee, and other crops are grown. However, only a small part of the native farm population is employed on these plantations.

In the Union of South Africa. To the south of the Tropic of Capricorn, there is still another group of farms and farmers (pp. 72-73). Some of these farms belong to Negroes and remind us of farms in tropical Africa. Others are more modern farms, owned by European settlers.

Most of the farms owned by Negroes are in the Native Reserves, that is, land which has been set aside or reserved for the use of natives only. Their crops make a familiar list, including corn, sorghum, beans, peas, pumpkins. Nearly all will be used for food. There is some livestock, especially cattle, in nearly every village. Few of the animals are used for farm work. The hoe is the all-purpose farm tool.

Almost side by side with these subsistence farms are the large commercial farms, owned by Dutch or English settlers. Europeans control at least eight out of every ten acres cultivated in the Union of South Africa. Many thousands of Negroes have left the Native Reserves to work for these people. The woman in the picture on page 120, for example, works in the kitchen of a big farm home. The kitchen, shown in the background of the picture, is built in native style. A farm worker on one of these commercial farms may be paid entirely in cash, or he may be permitted to use a small patch of ground for himself in return for part or all of the work he does on the big farm.

In one big farm, owned by a Dutch settler, near Pretoria (p. 390), there are 3400 acres of land. About 500 acres are planted in corn, the outstanding crop of the Union of South Africa. Except for gardens, the rest of the land on the farm is used for grazing. About 200 Negro helpers are required for the farm work. Each worker is furnished a simple home, which looks much like the kitchen in Figure 132. In addition, the worker gets a small wage and is allowed to cultivate nine acres for himself. In return he must work four months in the year for the farm owner.

Farmers of Australia and New Zealand

Grain and dairy farmers. As you have read, much of the land in Australia is used for ranching and herding (pp. 47-48). The value of the wool, hides, and meat from the ranches is greater than the value of all the crops which are produced on the cultivated land. As is shown in the map on pages 72-73, most of the farm lands are in a narrow strip along the eastern and southeastern coasts.

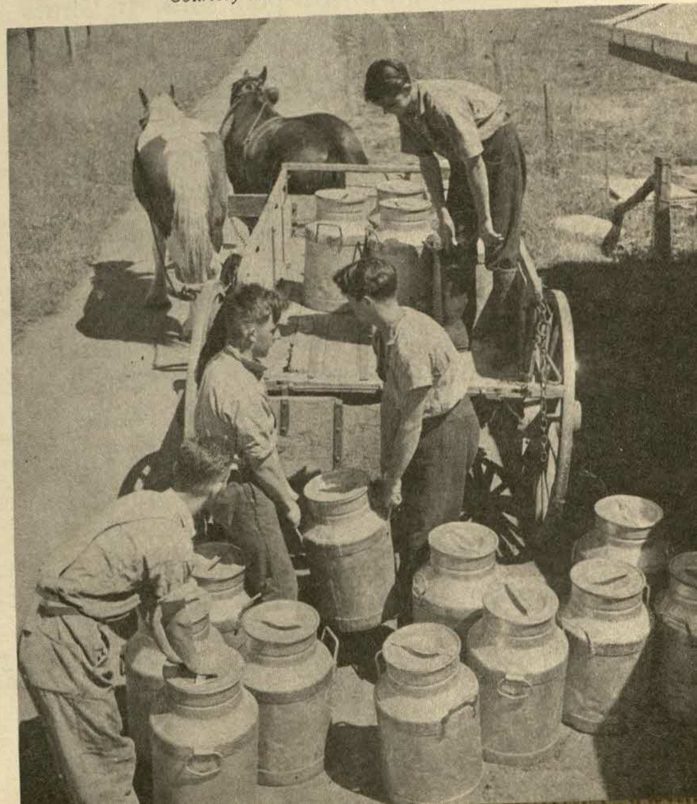
The greatest field crop in Australia is wheat. At harvest time, the combines move across the wide fields much as in the United States (p. 57). Farmers also grow other crops such as barley, hay, and some fruits and vegetables.

In New Zealand, dairy farming is outstanding. Each morning thousands of cans of milk are collected, as shown in the picture. Almost nowhere are dairies more modern than in New Zealand. Milking machines have come into use there almost as rapidly as in the United States.

New Zealand lacks large city markets for milk near at hand such as those near the great dairy regions in the United States. How, then, has dairying developed to so great an extent? Here the answer lies partly in one gift of the Industrial Revolution—refrigeration. For in New Zealand much milk is made into butter and cheese, which can be shipped in refrigerator ships to markets thousands of miles away. In fact, butter and cheese have come to be the chief exports of these islands. Another reason is that the handicap of distance is offset in large part by the advantages of the mild, rainy climate and year-round pastures.

Figure 133. A familiar dairy scene

Courtesy Australian News and Information Bureau



Success in Farming

Much or little. It has been a long journey, trying to see and understand the farmers of five continents. Along the way you have observed many different farm people, whose ways of living and working vary widely from place to place. All of the farmers depend on the direct use of the same great natural resource—the soil. Not all have equal success in using the soil. The Pachperwa farmers in India, for instance, get a very poor living. Other farmers, including many in Australia, Denmark, and the United States, make a good living. How can such great differences be explained?

There are many possible answers to this question, no one of which is a complete explanation. But in the world as a whole the following three facts do much to help us see why some people have made more progress than others.

The resources of the land are not equally divided. There are differences in the kind, the amount, and the location of farm lands. Some farmers are fortunate in having fertile soils. Others work with poor soils. In China an average of more than a hundred families must depend on each square mile of cultivated land. In the United States the same amount of land may be used by less than a dozen farmers. One farm may be near a highway or railroad, while another is far from good transportation.

Many farmers do not know how best to use the soil. Farming is a science. It takes careful study to know which crops are best on each particular kind of land, and how they should be cared for on that land. A knowledge of markets may be equally important. Unfortunately there are millions of farmers who cannot read and write, and so have had little opportunity to learn about modern methods of farming. There are many, too, who lack the money to use the knowledge they may have of modern methods.

Many farmers do not have the tools that are needed for better farming. Many farmers know that they should farm differently but find it impossible to do so because of lack of equipment. This includes simple plows as well as tractors and harvesters. The more important gifts of the Industrial Revolution have reached only a small part of the world's farmers.

What can be done? There is no simple or easy way to solve these problems. Clearly, however, there are some things which would help. Extending irrigation would make more land available for cultivation. Improving the crops and livestock may help much.

Better education for all the people would bring about some improvement in farming. Building new highways and railroads would help farmers get their goods to market. This, in turn, might help them get better prices for their crops. Perhaps then they could afford more and better machinery.

Above all, we must not waste soil resources by letting the soil wear out, wash away, or blow away. The loss of any soil is a loss not only to farmers but to all the people in the world.

Helps in Learning

1. Find the farm lands of northwestern Africa on the map on pages 72-73. Find the same area on the rainfall map, pages 372-373. How does the rainfall map help explain why farming is more important than ranching and herding in that area?

2. The story of the oasis farmers shows how much the people of the desert depend on water. Find out, if you can, where the community

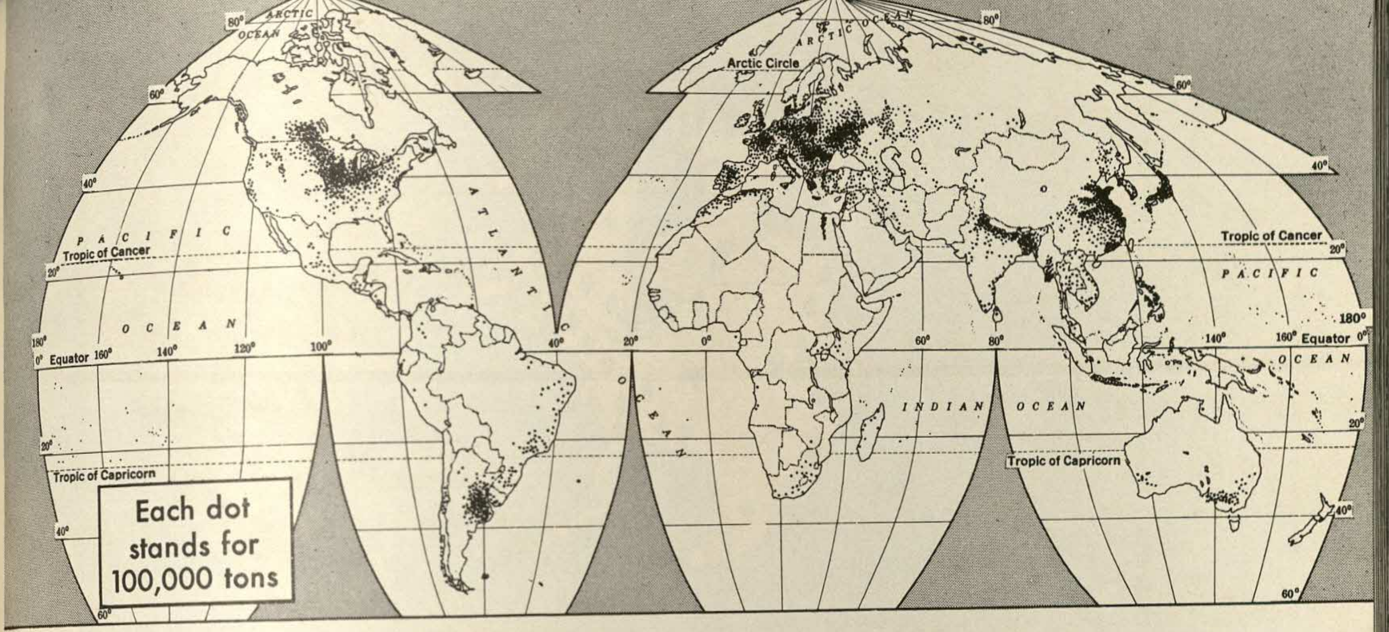


Figure 134. World production of the principal grains *Adapted from map by U. S. D. A.*

in which you live gets its water. Is this source of water dependable at all times? In what different ways is the water supply used in your community?

3. Which squares on the map, pages 72-73, stand for the farm lands of the Nile oasis?

4. Look again at the story of farming in Nigeria, and find Nigeria on the maps on pages 390, 72-73, 372-373. Then tell what you might expect to see if you were to travel from the coast of Nigeria to the northern boundary. Try to give reasons for the changes you would observe.

5. Could you make this trip across Nigeria by railroad (p. 390)?

6. Does the picture on page 119 suggest subsistence farming or commercial farming? Why?

7. In what two ways does farming in tropical Africa resemble farming in tropical South America, where the Jivaros live (pp. 94-95)?

8. The map above shows where the principal grains are produced in the world. Does the map show that most grains are produced in tropical lands, or in lands outside the tropics?

9. On the map above, find the United States, China, India-Pakistan, and Russia. To find China, India-Pakistan, and Russia, you may need to compare this map with the map of Eurasia on pages 386-387. The United States, China, India-Pakistan, and Russia are the leading four grain-producing countries in the world.

10. The world's chief grains are rice, wheat, and corn. Which one can be grown in the coolest lands (p. 115 and maps on pp. 75, 79)? Corn is the most valuable grain crop in the United States. Is corn grown in tropical lands, as well as in the United States? What is the outstanding grain crop in the hot and rainy lands of Asia?

11. Argentina produces much less grain than the United States yet sometimes exports more. Burma produces less rice than India-Pakistan but exports more than India-Pakistan. One important reason is indicated by the map on pages 370-371. What is that reason?

12. Make a list of 10 foods made entirely or in part from grain. After each item on your list write the name of a farming area where the grain might have been grown.

13. How do ranchers in the western states and farmers in the corn belt cooperate in raising beef cattle (p. 77)?

14. Why do you think little meat is exported from the vast grazing lands of the Sahara and of Saudi Arabia (pp. 49-50)?

15. Between pages 72 and 123 there are more than 40 pictures showing farm work. Make a list of five of these pictures which suggest commercial farming. Make another list of five pictures which suggest subsistence farming. Tell why you think each picture belongs in the group in which you placed it.

16. Tell what you think the following sentence means: "The loss of any soil is a loss not only to farmers but to all the people in the world."

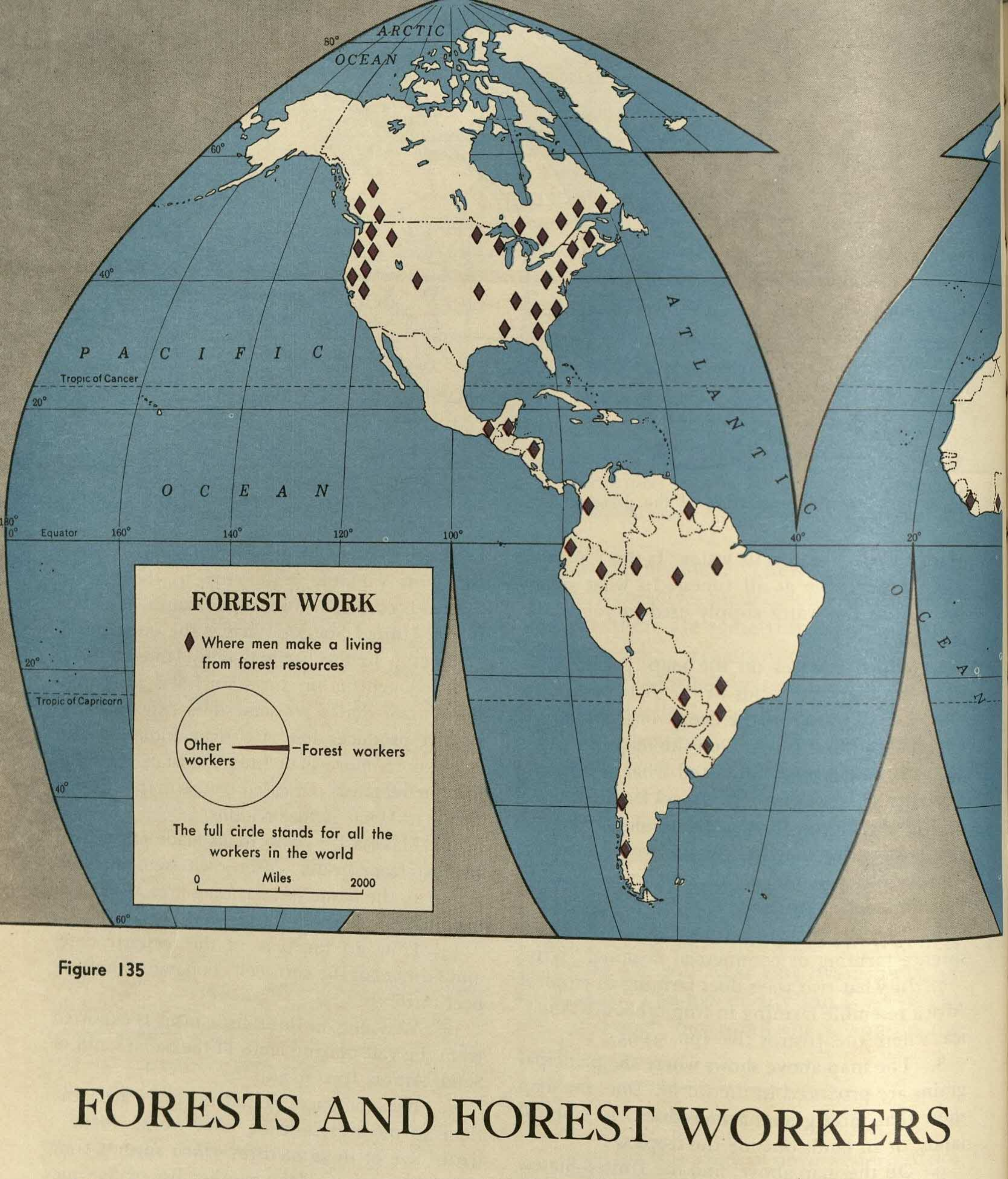
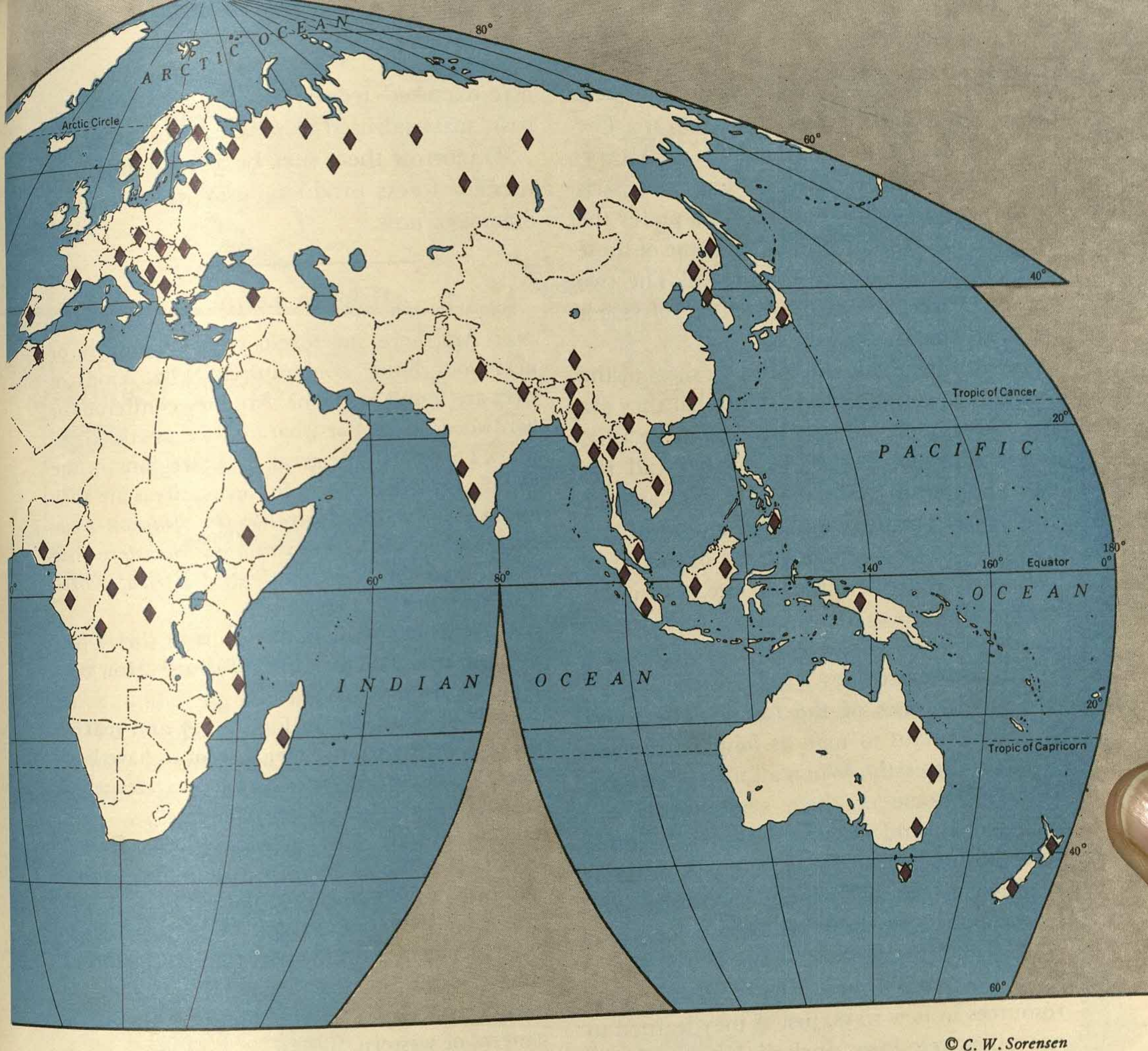


Figure 135

FORESTS AND FOREST WORKERS

The forest—enemy or friend. A great many stories have been written about the people who live in or near the forest. In some of these stories the forest is described as a dark place of danger. Children get lost in the forest, robbers hide in the forest, fierce animals roam the forest. In other stories the forest is a cheerful place. The birds are colorful, the animals are friendly, and people feel secure in their forest homes.

All of these stories may have something of truth in them. In general, however, the forest is and always has been the friend of man. Forests help to prevent water from washing



© C. W. Sorensen

away the soil. Because they slow up the flow of water, they help to prevent floods in the lowlands. Forest products of one kind or another find their way to almost every home in the world. Many thousands of people make a living by working in the forest.

Forests and forest workers. The map above shows the chief places in the world "where men make a living from forest resources." The maps on page 127 show where the forest resources are found. Taken together, these three maps demonstrate that forests and forest workers are spread widely through the world. In fact, forests cover nearly one-third of the land surface of the earth.

It may be surprising, then, to find from the circle graph on the map above that only a small part of the world's workers are engaged in forest work. In most instances, forest work and sparse settlement go together.

The world's forests are by no means all alike, as shown by the map at the top of page 127. According to the United States Department of Agriculture, trees may be divided into two great classes: the conifers, which include the pines, spruces, cedars, and firs; and the broad leaves, which include the oak, maple, ash, hickory, elm, and walnut. The conifers, or those we commonly call evergreens, live mainly in the colder, drier parts of the world. The broadleaf trees prefer the warmer, more humid climates. Some of those in tropical regions are evergreen. The two classes of trees are also known as softwoods and hardwoods.

In reading about the forest workers of the world it is well to keep in mind that they are not the only people who live and make a living within the forest. You will recall the Sakai hunters in the forests of Malaya, and the trappers in Canadian and Russian forests (pp. 31, 34). The workers described in this chapter differ from the others in the *kind* of resource which they use in getting their living. Forest workers depend directly upon the trees which nature provides.

Changing uses of the forest. The forest has been useful to man as long as man has lived on the earth. When all men were food-gatherers, some of them undoubtedly collected fruits and nuts in the forest. Simple homes could be made of bark, leaves, or limbs of trees. Clubs made from wood were used as weapons. By burning wood, food was cooked and people were warmed.

As time passed men learned to use forest resources in new ways, just as they learned to use other resources, including minerals, in new ways. In ancient Egypt, as shown on page 53, the oxen carried a wooden yoke and pulled a wooden plow. Columbus sailed across the Atlantic in a wooden ship.

The Industrial Revolution brought a great increase in the use of mineral fuels, coal and petroleum especially. Most of the new machines were made of iron and steel instead of wood. Yet the use of wood has also continued to increase, partly because men have invented new ways of using it. Rayon, for example, is in part a product of the forest. This geography book is made largely of wood. Until about 100 years ago, nearly all paper was manufactured from rags. Now wood is the basic material used in making most paper.

Tomorrow there may be a thousand other uses for forest products, uses which no one dreams of now.

Helps in Learning

1. Are there any forests or woodlands in or near your home community? What kinds of trees are found in them? Are they coniferous or hardwood trees? For what do men use the trees?
2. There are five great forest regions in the world. In which of the following areas are they found (Fig. 136): *Australia; the Amazon Lowland; Spain; northern Eurasia; southeastern Asia and Indonesia; Mexico; Central Africa; North America; British Isles?*
3. Which type of forest seems to thrive best in warm lands? Which in cold lands? How does Figure 136 show this?
4. Study the map in Figure 137 and make a list of at least six states which seem to have large forest resources. Make a list of six states which seem to be poor in forest resources.
5. Find your state in Figure 137. Does it seem to have more, or less, wealth in forests than California? Pennsylvania? Texas?
6. Many farmers in the United States get extra money by working part time in the forests. Are opportunities for this work better in Nebraska or Georgia? In Oklahoma or Maine? In eastern, or western, Texas?
7. Make a list of at least six things in your classroom that are made of wood.

Logging in the United States and Canada

Where the forests are. The map at the top of page 127 shows a forest region in North America shaped somewhat like a horseshoe, with the open side to the south. Forests extend northward from California, reach from west to east entirely across Canada, and extend southward along the Atlantic coast to the Gulf of Mexico. But we find no such horseshoe pattern on the map of forest work,

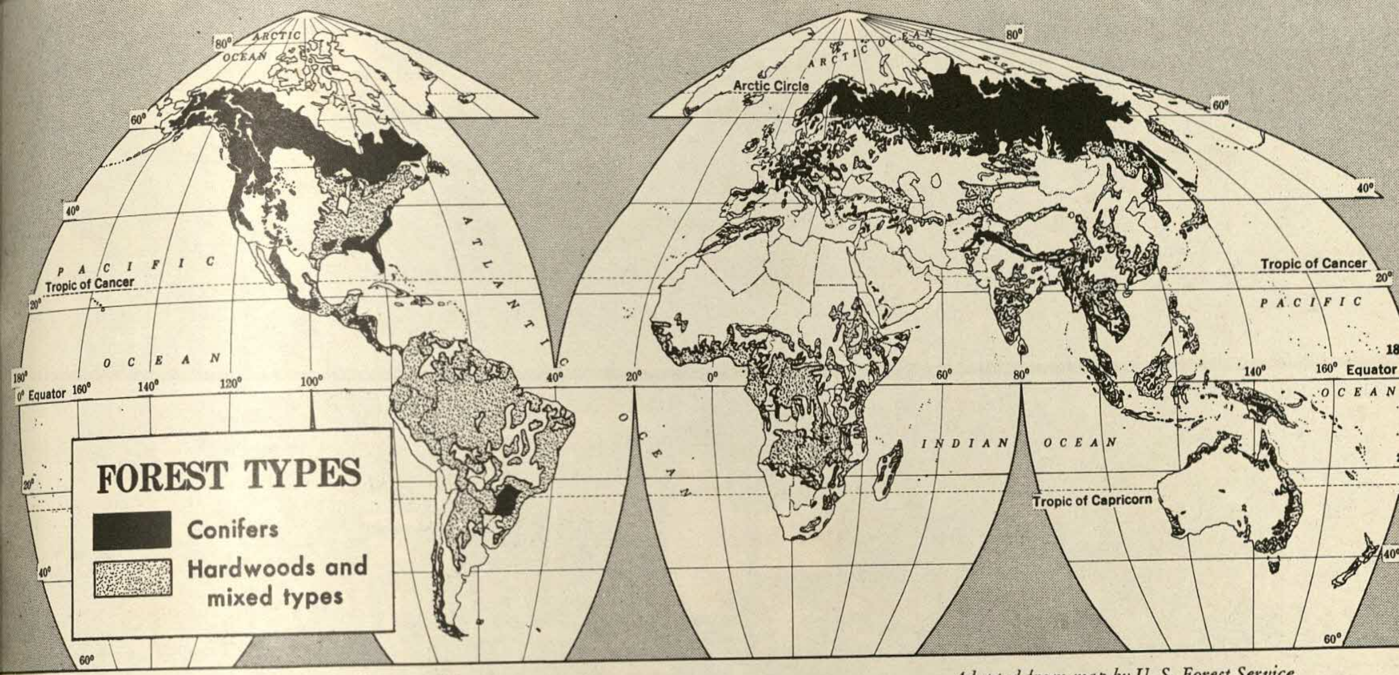


Figure 136. Forests of the world

Adapted from map by U. S. Forest Service

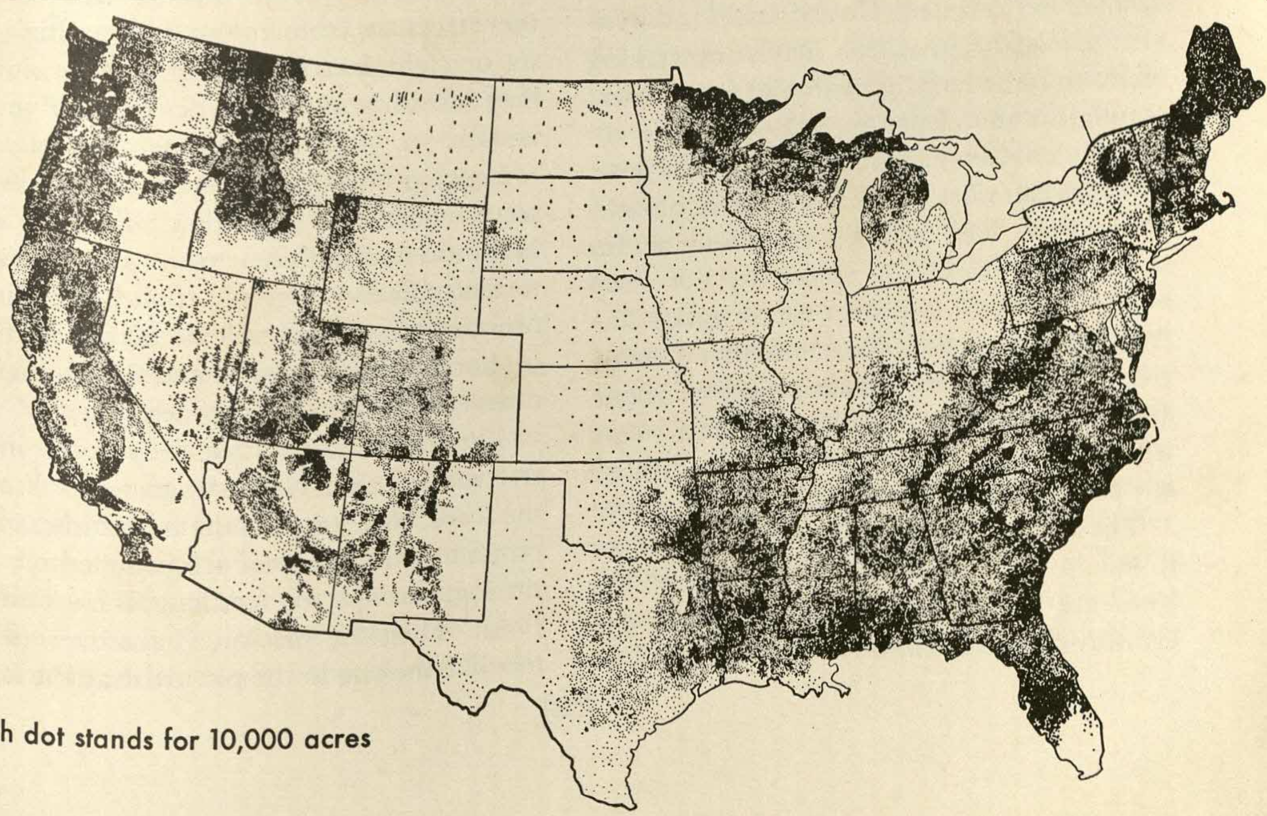
pages 124-125. There is one forest-work region near the Pacific, another near the Atlantic, and a big gap in between.

The explanation for this difference is simple. In the middle and northern parts of Canada, there are many thousands of square miles of forest land where there is very little forest work. The trees there are not so good as some of those farther south. Furthermore, these forests are much farther away from markets than are those of southwestern and southeastern Canada.

Logging in the West and Northwest. Famous throughout the world are the forest

Figure 137. Forest lands in the United States

Adapted from map by U. S. Forest Service


Each dot stands for 10,000 acres

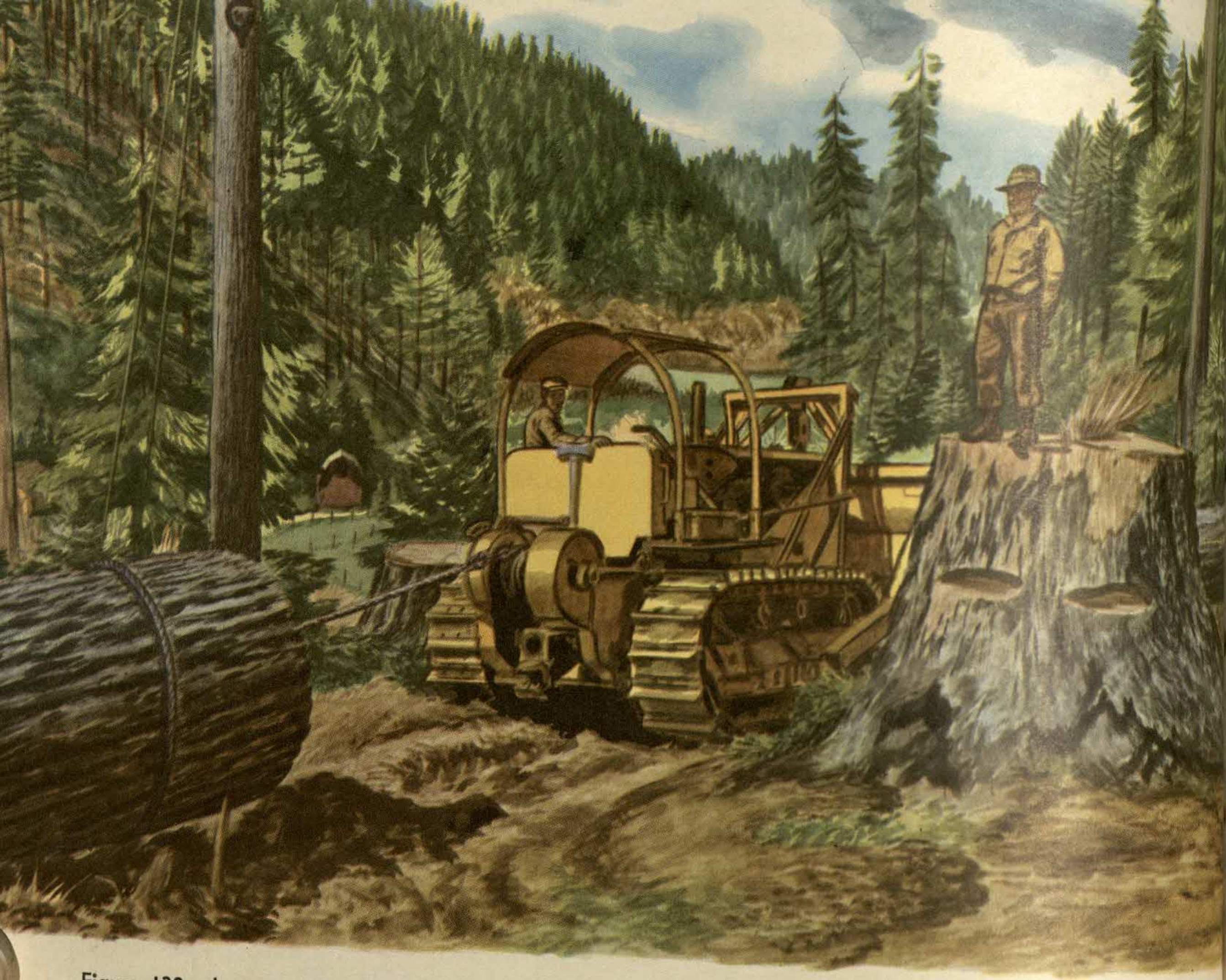


Figure 138. In a western forest

From photo by Caterpillar Tractor Company

lands of northwestern United States and western Canada. In these lands everything seems to favor forest growth and forest work. Rainfall is abundant (pp. 372-373). The climate is mild enough so that trees can grow and men can work in the forest for 12 months in the year. The forests cover the mountain sides, but most of the slopes are not steep enough seriously to hinder forest work. The trees grow in almost pure stands, that is, many trees of one kind are growing together in one area. It is easier to handle and market many trees of one kind than trees of several different kinds. Usually it is more profitable, also.

The tallest trees in the United States are found in these western forests. Most of the trees are coniferous. Outstanding are the California redwood and Douglas fir. Many of these trees are from 200 to 300 feet high, and six or eight feet in diameter. One big tree may furnish enough lumber to build several houses.

Logging work. The scene shown in the picture above is one that might be seen in hundreds of different places in the western forests. There, logging is a big business. More and more, tractors are taking the place of horse-drawn wagons and little engines, often called "donkey" engines.

The logger first cuts a deep notch into a tree with his axe. Next, two men saw through the trunk, and watch as the tree crashes to the ground. The branches are trimmed off, and the log, perhaps 100 feet long, is cut into sections. Then the machines take over. Tractors like the one in the picture drag the heavy logs out of the thick forest to loading stations. There they are transferred to huge trucks or railway cars. The next stop is the sawmill, where logs of different kinds are turned into wood products, varying from shingles and railroad ties to common lumber for building houses and barns. Most of the lumber moves east by rail to markets in the central and eastern parts of our country.

Recently some power-driven saws have been introduced in the West and in other parts of the country. These saws can be used for cutting down trees as well as for cutting them into sections. Perhaps the time will come when loggers like the one in the picture will no longer need to use their skill in handling an axe and pulling a crosscut saw.

Logging in the East and Northeast. Another great forest region is in eastern Canada and northeastern United States. As the map at the top of page 127 shows, it is a region of both coniferous and hardwood forests, including spruce, pine, hemlock, fir, birch, maple, and poplar.

Logging in this region is somewhat different from that in the West and Northwest. Some of the differences grow out of the fact that eastern Canada and northeastern United States are considerably colder than are the forest lands near the Pacific coast.

Logging is chiefly winter work in the eastern forests. Men start working as early as September, trying to get out as many trees as possible before the snow gets too deep. Some snow is an advantage, for then logs can easily be moved on sleds, drawn by horses or tractors. During the winter the logs are piled on top of the ice of frozen lakes and rivers, awaiting the spring season. As soon as warm weather thaws the ice, the logs move out of the lakes and down the rivers, floating perhaps 100 miles or more toward the mills.

Frequently logs belonging to as many as 20 different companies come floating down the same stream. A picture on page 130 shows one way in which they are sorted. When the trees were cut, loggers put a paint mark on each log to identify it. The men in Figure 139 watch for these paint marks, as the logs float slowly by. When a man recognizes the mark of his company, he pulls the log aside with a long pole. Later, a large group of logs belonging to a particular company may be fastened together to make a raft, which is then floated on toward the mill.

In this region, as elsewhere, the motor truck has come into wider and wider use. Many trucks carry logs directly from the forest to the mills. Nevertheless, the spring "log drive" remains a familiar and exciting scene.

Using trees for pulp. Many logs from the forests of southeastern Canada and northeastern United States are made into lumber. But the specialty of the region is wood pulp. After the logs in Figure 139 get to the mill, they will be chopped into many thousands of small chips. These chips are cooked or ground and mixed with water until they form the soft mass known as *wood pulp*. This pulp is one of the basic materials used in making many kinds of paper.

When compared with the logs shown on page 128, the logs in Figure 139 are exceedingly small. In fact they are far too small for lumber. But small size is no handicap when the logs are to be chopped up. As a result, vast forests that are of little value for lumber have become very valuable for wood pulp. Spruce is widely used in making pulp, but it is now possible to make pulp from many other trees, including some hardwoods. This kind of logging is increasing in importance.

Logging in the Southeast. Southeastern United States also has advantages for the production of forest products. As the maps on page 127 show, forests are abundant between eastern Texas and Maryland. These are coniferous, hardwood, and mixed forests. Southern pine is most widely used. Other useful trees are oak, hickory, walnut, gumwood, and the cypress which grows well in swamps. The hardwoods are well suited for use in making furniture, tool handles, baseball bats, and other things for which great strength is required.

It is an advantage that much of the land in southeastern United States is nearly level or gently rolling, so that it is easy to harvest the trees. The weather is mild enough for year-round work. Markets are fairly close. Some of them may be reached by ships sailing along the coast. One great advantage is that trees grow rapidly in the warm, rainy Southeast.

Some logging companies lay temporary railroads through the forest. An engine winds a cable perhaps 1000 feet long, which pulls logs to the railroad. Elsewhere, logs are carried to the mills by truck or by boat. Increasingly, machines are used for work formerly done by men.

Two new developments. The picture in Figure 140 was taken a few miles south of Norfolk, Virginia. The sign calls attention to two developments of tremendous importance in the Southeast. One is growing pulpwood. For a time it was believed that the trees in southeastern forests were not suited for making pulp. It is now known that they make good pulp. New pulp and paper mills prove it. Some people believe that in the future most of the nation's wood pulp will come from the Southeast.

The other development is the growing of trees as a crop, planting new trees as fast as old trees are cut. Too often, in the United States, lumbermen have moved through the forests like an invading army, cutting the best timber, wasting the rest of it, and replanting nothing. Towns which grew up with the logging business were abandoned after the trees were gone. The empty houses rotted away or were burned in the fires which frequently swept the cutover land.

The gain in growing trees as a crop, therefore, is clear. Lumber companies need never move, because of a shortage of trees. Villages need never die, because there is no work for people to do. Forest resources can be as great 100 years from now, as they are today.

From Maine to California, from Minnesota to Florida, men are learning this lesson

Figure 139. Sorting logs

Courtesy National Film Board of Canada

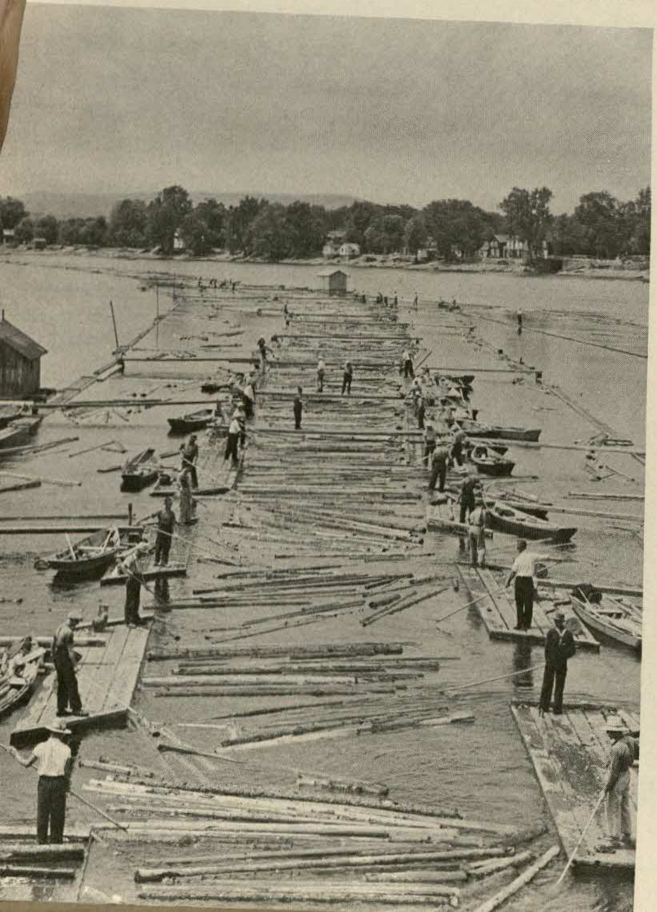
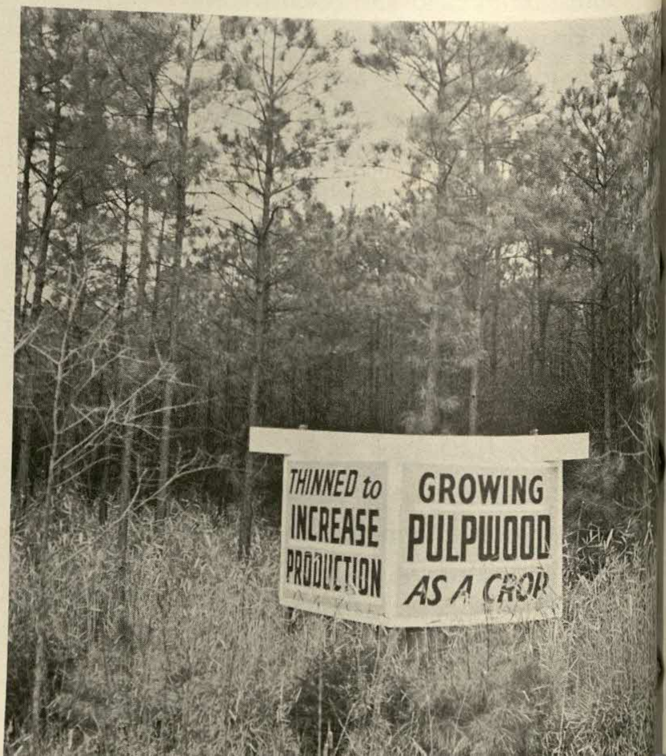


Figure 140. Recent developments *Photo by author*



about the wise use of forests. Unfortunately some of the lessons were learned only after valuable resources had been used up. And not enough people have yet learned the lesson. In the United States, forests are cut nearly twice as fast as the new trees will grow. Simple arithmetic tells us that this must stop.

Logging in Other Parts of the World

The picture on this page was taken in Burma. It shows how different forest work can be in another part of the world. An elephant is holding a log between his tusks and trunk, while he carries it from one place to another. The elephant might almost be called the tractor of Burma. Of course, the strongest elephant could scarcely lift logs of the size which the tractor is dragging (Fig. 138). But elephants can be harnessed so that they too can drag logs along the ground.

The use of elephants to help with forest work is an ordinary, everyday affair in much of the tropical Far East. Yet in the world as a whole, it is an exception. The great bulk of the world's logging is done somewhat as it is in the United States and Canada. In these lands, however, workers use much more labor-saving machinery than do those in most other places in the world.

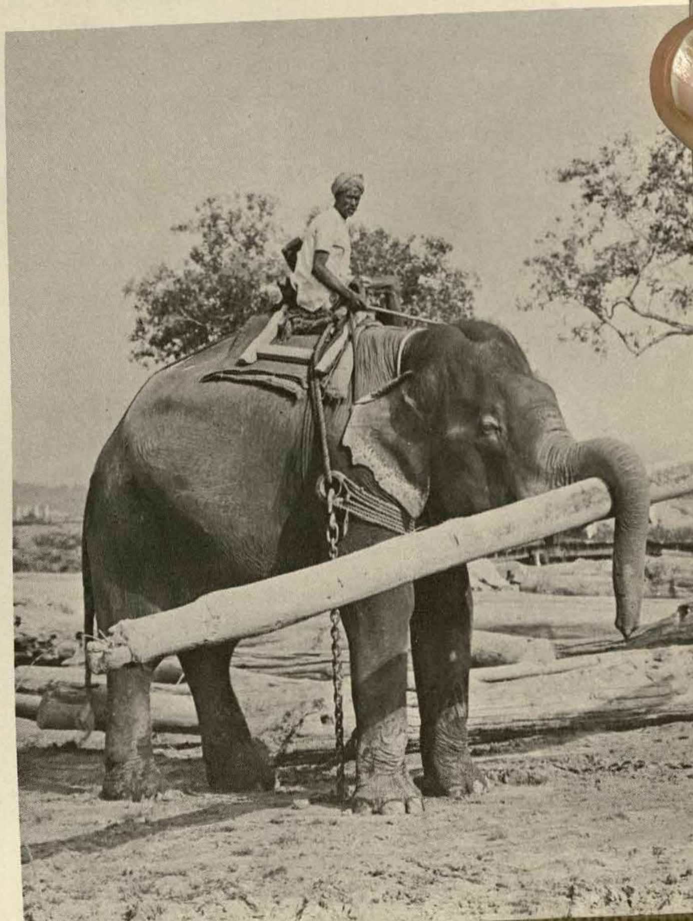
The biggest forest in the world. The forest of northern Eurasia reaches almost halfway around the world, from Norway to eastern Siberia (Fig. 136, page 127). No other forest on the earth is so large.

For the most part this is a valuable forest of spruce and pine. Norway, Sweden, and Finland have made wonderful use of their parts of it. The map on pages 124-125 shows, however, that little forest work is done in much of the Russian section. Russia has not yet needed to draw heavily on the forest resources of this vast area. Lack of good transportation has made it difficult to get logs and lumber out of this region. Most logging is done near streams, where logs can be floated to sawmills. But the great rivers of the Russian forest flow to the north, toward the Arctic Ocean. Along that coast, the ocean is covered with ice many months in the year. This makes it difficult to get lumber to market. So the full use of the largest forest in the world must wait for new railroads and highways in Russia, and for the development of ocean shipping in the Arctic Ocean.

Europe has long been a leader in scientific forestry. In many places forests are as carefully cared for as any farmer's crops. Trees planted this year may not be cut for 75 or 100 years. Planning of this kind takes into account the needs of future generations. So successful has this work been that several countries have more land in forest now than they had a century ago.

In tropical forests. One of the most striking facts about the world's forests is that almost half of them are hardwood forests in the tropics (Fig. 136, p. 127). These include the huge Amazon forest, the African forest,

Figure 141. An elephant helps with the work
© Ewing Galloway



and the forests of southeastern Asia and the East Indies. Another striking fact is that little logging is done in tropical forests. The map on pages 124-125 shows scattered spots of forest work within the tropics. However, much of this is work other than logging.

What has held back logging in these forests? The answer is, "many things." Getting logs out of the forest is a terrific problem. The ground is water-soaked. Underneath the trees there may be a tangled mass of vines and underbrush that is very difficult to get through. There are few railroads or highways. There is no lack of streams in the tropics, but many logs are so heavy that they will not float.

In spite of these and other handicaps, shipments of mahogany, tropical cedar, ebony, teak, and other woods move regularly to markets outside the tropics. But, like the Russian forest, the vast tropical forests remain a resource of the future rather than of the present.

Other Kinds of Forest Work

Trees have many uses. Logging, that is, the cutting down of trees, is the work done by the larger part of the world's forest workers. Many people, however, depend for their living on other uses of trees, particularly collecting forest products. For example, the two pictures on page 133 show something of the making of maple syrup and of turpentine. Other products from the forests include rubber, Brazil nuts, chewing gum, quinine, palm oil, and coconuts.

Making maple syrup and maple sugar. When the early settlers came to New England and southeastern Canada, they found that Indians were making sugar from the sap of certain maple trees. The newcomers tried it and liked the product.

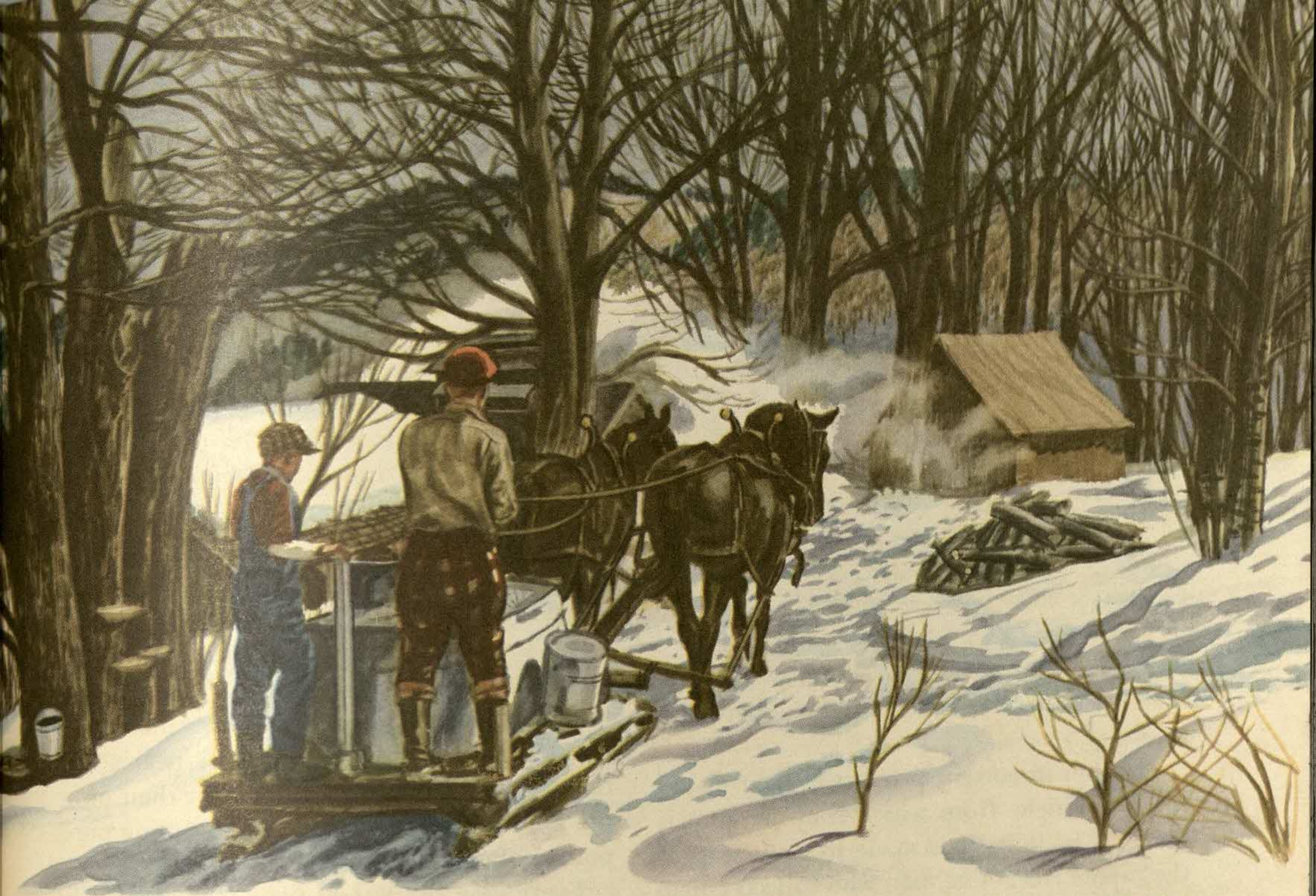
Since that time, each year, in Canada and in northeastern United States, men have looked forward to "sugar weather," as it is called. This usually begins in February with frosty nights and warm days, and lasts from six weeks to two months. The men drill small holes an inch or two deep in the sugar maple trees, attach spouts and buckets, and wait for the sap to drip into the buckets. In Figure 142, the men have just returned from their daily trip through the groves. The buckets of sap were emptied into the tank on the sled. Soon this sap will be boiled down in the sugar house, shown in the background.

During one season a single tree may yield 10 to 20 gallons of sap or more. When boiled down, this will make two to four quarts of syrup. If boiled still more, it will turn into maple sugar.

Making turpentine. The making of turpentine also depends on collecting sap from trees. The picture (Fig. 143) shows a turpentine still in a pine forest in Georgia. The sap of certain pine trees is brought to this still to be refined into turpentine and rosin. The turpentine may be used in manufacturing paints and varnishes, plastics, and medicines. The rosin may be used in making soap, linoleum, ink, roofing material, and various other products.

Collecting forest products in the tropics. The tropical forests, though little used for lumber, offer the world an amazing variety of things. Here and there throughout these forests, there are men who collect forest products. For some men this work is a side line that goes with hunting, fishing, or farming. Others depend chiefly on this collecting in order to make a living.

Fifty years ago, millions of dollars' worth of rubber was collected each year from the wild rubber trees of the Amazon forest. Now large quantities of Brazil nuts are collected each year from these forests. Rubber is no longer the chief product. Nearly all natural rubber now comes from trees on plantations in Malaya and Indonesia. The climate in the tropical forests of the Far East is similar to that along the Amazon, but the Far East has a much larger supply of labor. It is usu-

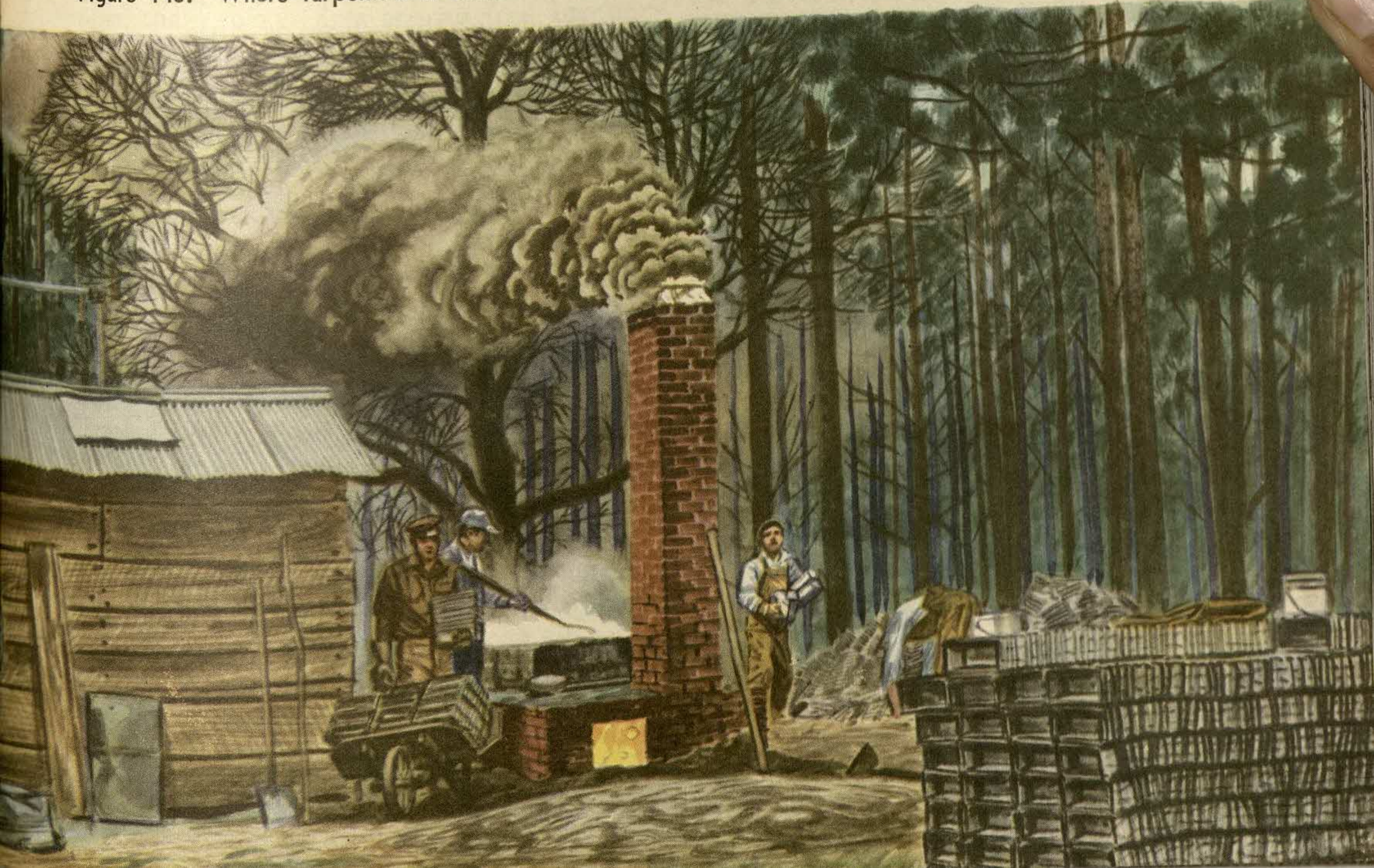


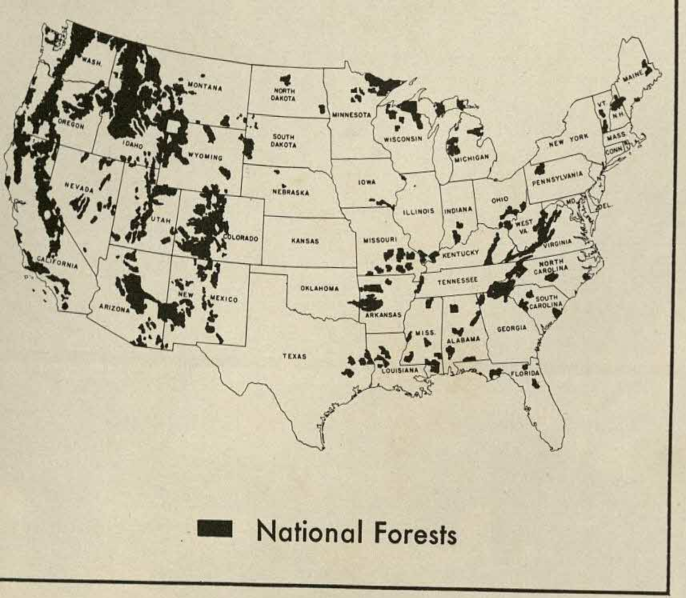
From photo by Marion Post Wolcott

Figure 142. When it is "sugar weather"

From photo by Jack Delano

Figure 143. Where turpentine is made





From map by U. S. Forest Service

Figure 144. They belong to all of us

ally cheaper to grow rubber on plantations than to collect so-called wild rubber in a forest.

Another important product of the tropical forest is chicle, from which chewing gum is made. Chicle itself is made from the sap of the zapote tree. The man who collects chicle is called a chiclero. The chiclero makes small cuts in the bark, hangs a bag below the cut to catch the sap, returns to collect it, and carries it to a hut where he cooks it over an open fire. As chicle cools, it hardens into blocks. Then the chiclero carries these blocks of chicle to a central camp in the forest. Most chicle comes from the forests between Mexico and Brazil (Fig. 136).

Collecting other products of tropical forests requires different kinds of work. Men find their way up the slopes of tropical mountains to get the bark of the cinchona tree, from which the medicine quinine is made. Workers in African forests climb certain palm trees to gather the fruits from which palm oil and palm kernels are obtained.

Our National Forests

Who owns the forests? We, the people of the United States as a whole, own more than one fourth of the forest land in our country. Our forests are the national forests shown on the map on this page. There are also some state, county, and city forests. Nearly three fourths of the forest land in the nation is the private property of individual persons or corporations.

The work of the United States Forest Service. Our forests, the national forests, are in charge of the Forest Service of the Department of Agriculture. The men of the Forest Service have a great responsibility in protecting our forests and in managing the use of them.

Some timber in the national forests is sold, when it is no longer growing at a profitable rate. Removing older trees allows more room for the growing of young trees. The trees to be cut are usually marked in advance by a forest officer. People living in or near a national forest may obtain timber for their own use as firewood, fencing, or for building purposes, either free or at very low cost.

Every year the Forest Service arranges for the grazing of nearly six million head of livestock in the national forests. Thousands of ranchers depend on the pastures in these forests for grazing their sheep or cattle.

More than 5000 camps, picnic grounds, and resorts have been built in our national forests for the use of the public. Visitors come from far and near.

Some forest areas had been badly damaged by overcutting and by fire, before they became part of the national forests. The program of the Forest Service calls for planting trees on tens of thousands of acres of such land each year. The men of the Forest Service, also, protect trees from diseases and insects.

The most dramatic, and dangerous, of all work done by the Forest Service is fighting fires. Fire is the great enemy of our forests. A careful watch is maintained from many high lookout towers. In the picture on page 135, the forest ranger, with a pack train of fire-fighting equipment, is on his way to help put out a fire, which may have been started

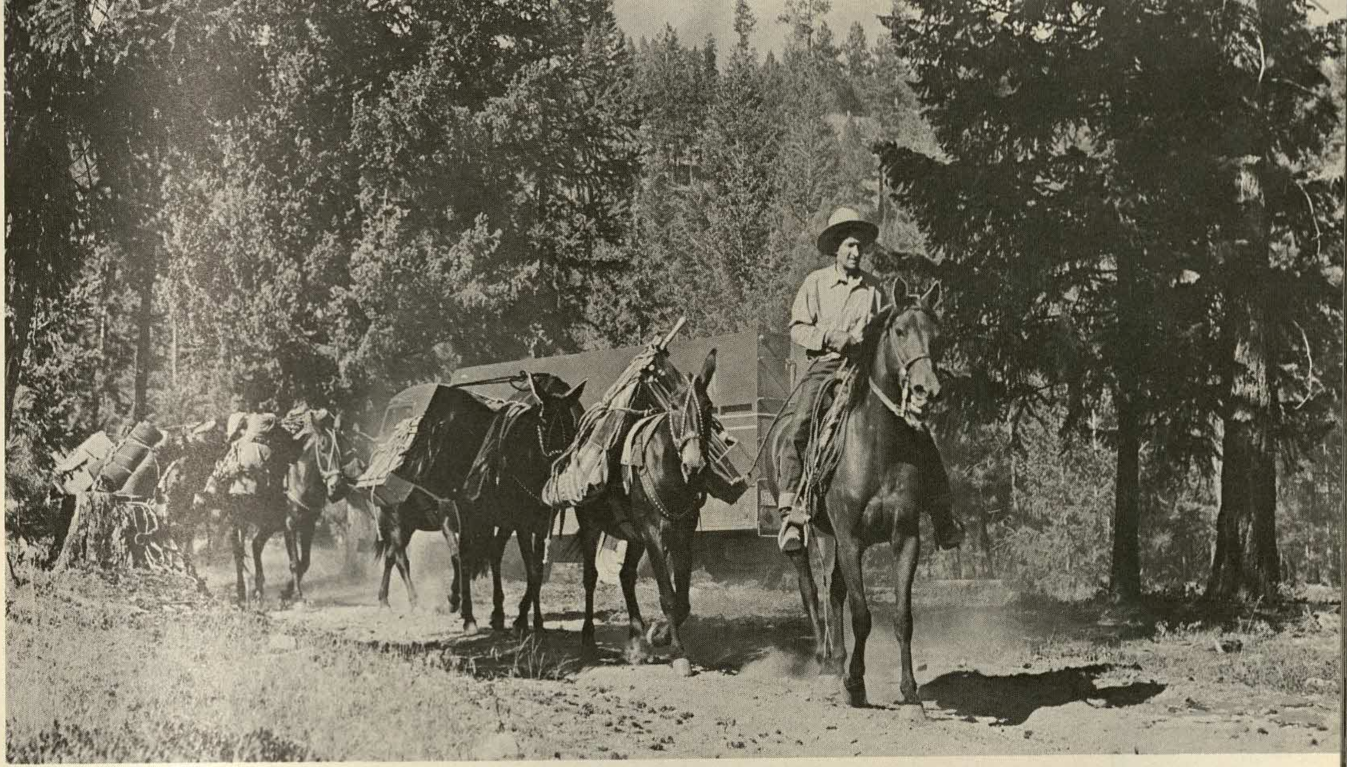


Figure 145. On his way to fight a fire

Courtesy U. S. Forest Service

by a careless smoker or camper. When a fire is difficult to reach by land, airplanes may be used to drop parachutes with specially trained men called "smoke jumpers." Every year more than 10,000 fires are put out by the skilled fire-fighters of the Forest Service.

Conservation means protection and wise use. As you can see from the work of the Forest Service, conservation means the *protection* of a resource as well as the *wise use* of it. In the case of forests, we can both keep them and use them. The conservation of our forests will benefit everyone.

Helps in Learning

1. Have you seen men cut down trees and haul the logs away? Were these men loggers, or did they make most of their living in some other way?

2. The map on pages 370-371 shows one reason why there is a greater market for lumber and paper in eastern United States than in the West. What is that reason?

3. What advantages are there for lumbering in southeastern Canada as compared with northern Canada?

4. Make a list of the advantages of forest work in southeastern United States.

5. Figure 140 calls attention to two important developments in forest work. Tell in your own words why they are important.

6. How does an increase in sales of magazines and newspapers directly affect forest workers?

7. Why has little use been made so far of the great Russian forest?

8. What are some of the handicaps of logging in tropical forests?

9. Are the chicleros commercial workers or subsistence workers? Why?

10. Is there a national forest in your state? (Fig. 144). Have you visited it? What did you see there?

11. Everyone who visits forests has one great responsibility in helping to protect them. What is that responsibility?

12. Tell why the people of your community should be concerned about the conservation of forest resources.

13. "Man lives in a changing world." What proof of this fact do you find in this chapter?

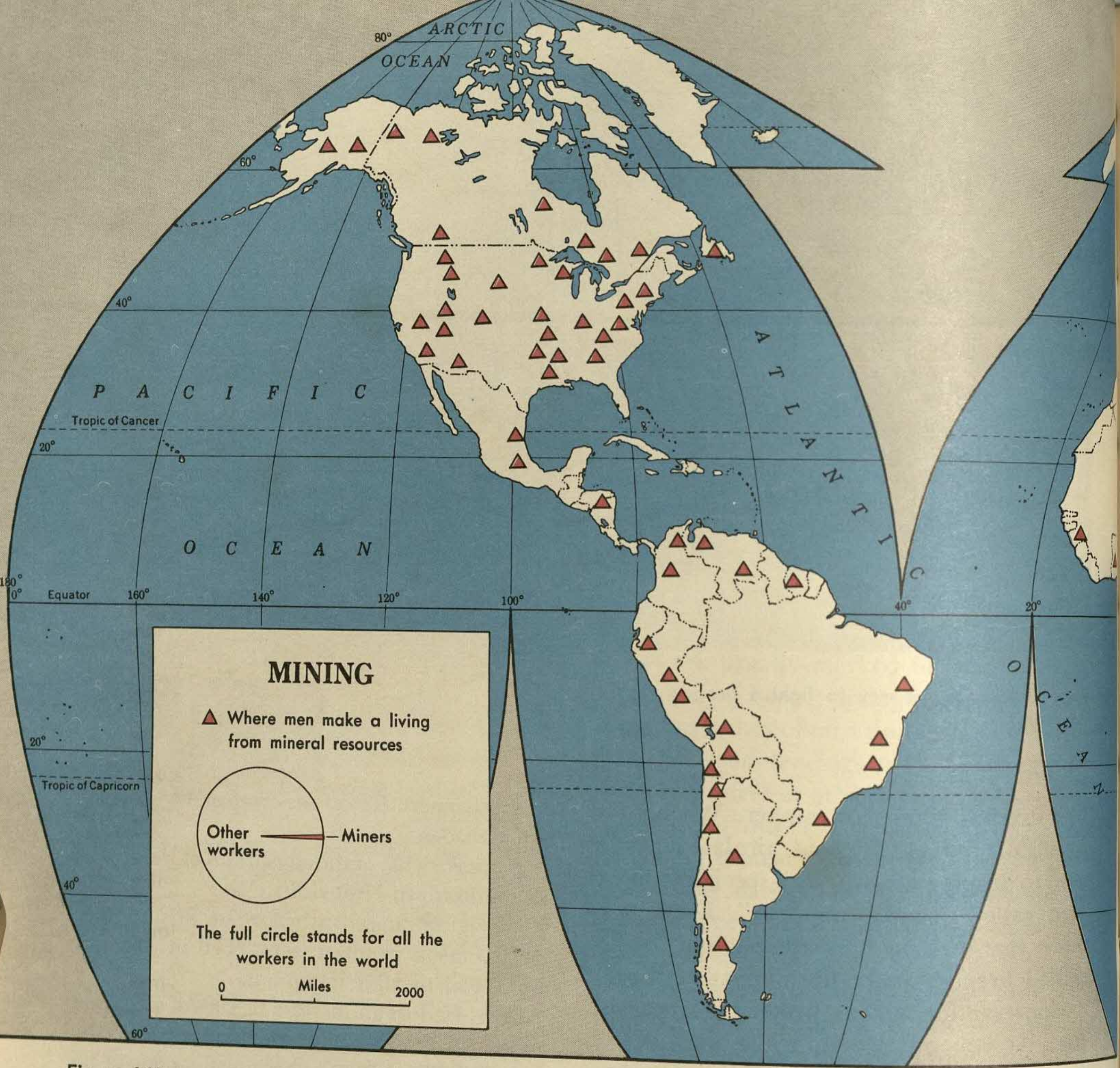
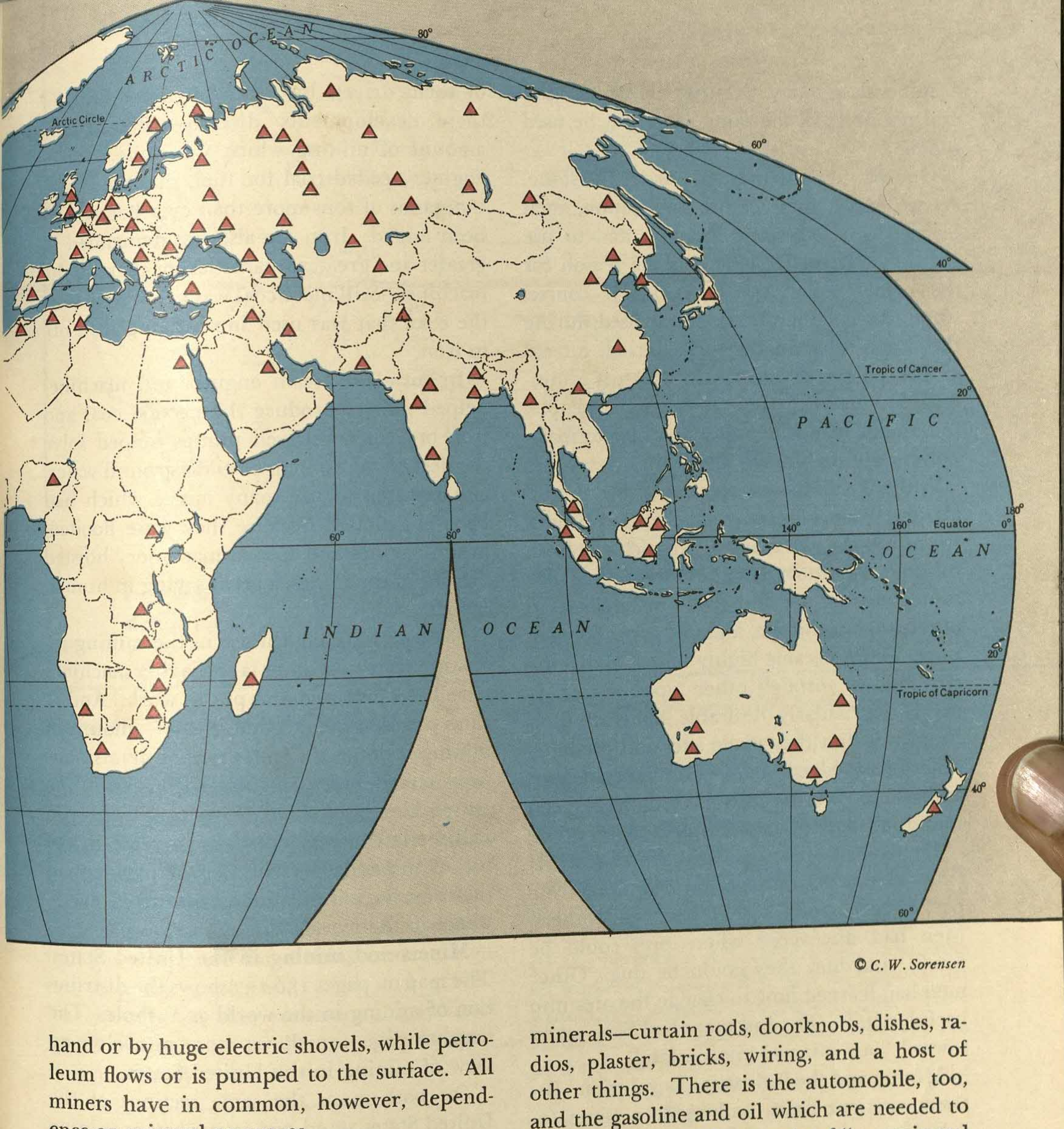


Figure 146

MINERS AND THEIR WORK

In five continents. On the map above, the red triangles which stand for mining appear in every continent. From Chile to Russia, from Alaska to New Zealand, there are places "where men make a living from mineral resources."

All the kinds of work about which you have learned are extremely varied. The work of mining also differs greatly from place to place. This you may guess by glancing at the pictures in this chapter. The red triangles on the map stand for the mining of coal as well as of diamonds, iron as well as sand, tin as well as petroleum. The ores may be dug by



© C. W. Sorensen

hand or by huge electric shovels, while petroleum flows or is pumped to the surface. All miners have in common, however, dependence on mineral resources.

Small numbers—important work. The graph on the map above helps us to compare the number of miners in the world with the number of other workers. The miners are few by comparison. But the products they provide for the world's use are of great importance.

In the average American home, there are hundreds of things made entirely or in part of minerals—curtain rods, doorknobs, dishes, radios, plaster, bricks, wiring, and a host of other things. There is the automobile, too, and the gasoline and oil which are needed to operate it. One writer speaks of "our mineral civilization." Certainly it is not too much to say that life and work as we know it today could not exist without miners and their work.

Man has always used minerals. As long as man has lived on the earth, he has made some use of mineral resources. Before and during ancient times he did not use the same group of minerals as today. Neither did he use mineral resources in the same way. But he used them.

One of the first minerals used was stone. As we know, long before civilization, men learned to make stone weapons and to use simple stone tools. That was the reason for the name, Stone Age (p. 24). Of course, stone was not the only mineral used during the Stone Age. In the same period, for example, people gathered salt, which is a mineral, for use with their food. Some people, too, mixed clay with water in order to make pottery and to plaster their huts.

Although all these early people used minerals, few, if any, of them could be called miners, since they did not make a living chiefly from mining. We know that there were some flint miners during the Stone Age in England, in other parts of Europe, and in Egypt. Some of these miners became highly skilled in digging shafts down through other types of rock to get at particularly desirable kinds of flint. From this flint they made axes and probably other sharp-edged tools. Flint axes, apparently made during this period, have been found in many parts of Europe.

By Roman times (p. 24), the use of various metals was already an old story—copper, bronze, gold, silver, iron, and others. Men had discovered where ores could be found, and how they could be dug. Other men had learned how to change the ores into useful metals. The first steps had been taken toward "our mineral civilization."

Mining and the Industrial Revolution. Between ancient times and modern times (p. 24), there were some, but not many, improvements in mining. The amount of minerals mined was small, and much of the work was done by hand. Then came the Industrial Revolution bringing with it many changes in methods of mining.

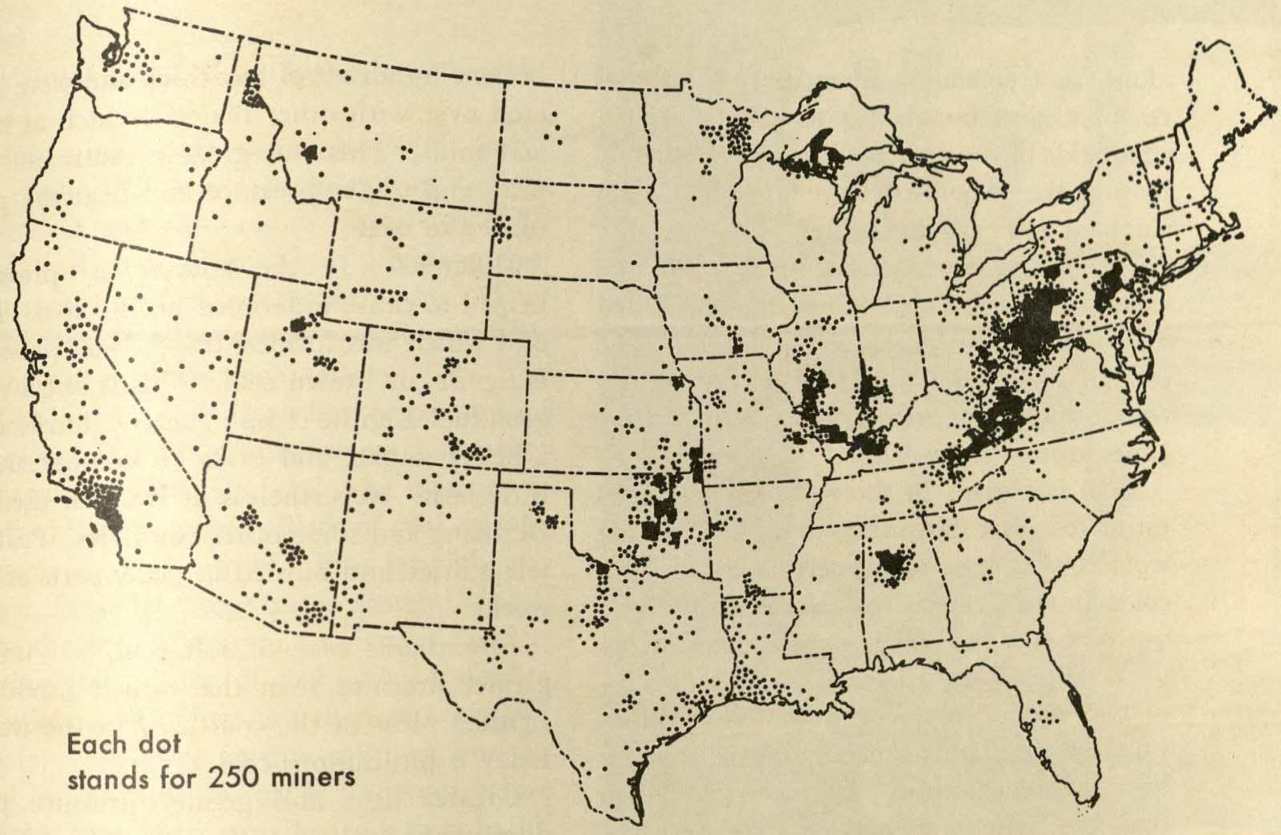
Among other things, the Industrial Revolution brought a new use of power, particularly steam power, and new machines, many of them driven by steam engines. Both of these developments directly affected the amount of mining which was done. Steam engines needed coal for fuel, thousands and thousands of tons more than ever before had been mined. Iron ore also was demanded in greater and greater quantities for making the machines. Still more coal was needed to make the coke that was used in changing iron ore to iron.

In turn, the steam engines and machines helped miners produce the needed coal and iron ore. Steam-driven pumps helped solve the desperate problem of underground water, and restored to use many mines which had been abandoned because they were flooded. Steam engines and special machinery hoisted ore out of the mines, a great saving in human labor.

Changes have continued in the mining industry. More and more labor-saving machines have been invented and put to work. And as time passes, a greater and greater amount of mining is done. *In fact, more minerals have been mined and used since 1900 than in the entire history of man before 1900.* As you will see later, this enormous increase in the use of minerals presents a real problem in the conservation of mineral resources, everywhere in the world.

Miners and mining in the United States. The map on pages 136-137 shows the distribution of mining in the world as a whole. The map on page 139 shows more of a close-up view of mining in the United States.

On both maps the same sections of the United States stand out as important mining regions. In using these maps, however, we must note one basic difference. The world map shows *where* mining is an outstanding kind of work, but it does not show *how many* miners there are. The United States map shows *how many* miners there are in the different parts of our country. And it also tells where mining is important. As shown on the United States map, every state has at least a



Adapted from map by National Resources Committee

Figure 147. Persons employed in mining

few miners. In some states, Pennsylvania, for instance, there are so many miners that in places the dots run together and form a solid black area.

The chief minerals of the United States, in value of production, are petroleum, coal, natural gas, rock used for making cement, iron ore, copper, stone, and sand and gravel. Taken together, they represent nearly nine-tenths of the value of all minerals produced in our country.

Helps in Learning

1. The work of mining is carried on in almost every climate, in dry lands and wet lands, in cold lands and hot lands. Use the maps on pages 136-137 and 372-377 to prove this.

2. Should you expect climate to affect the distribution of mining more, or less, than the distribution of farming?

3. Make a list of at least 10 things in your home which are made entirely or in part of minerals. After each item in your list, write the name of the mineral from which you think it comes: for example, Stove – *Iron,* Glass – *Sand,* Dishes – *Clay.*

4. Read again about the ways in which the Industrial Revolution changed the work of hunters, trappers, fishermen (pp. 30, 34), ranchers and herders (p. 42), farmers (pp. 55-59), forest workers (p. 126), and miners (p. 138). Then write a few paragraphs, using as a title: "How Man's Use of Natural Resources Was Affected by the Industrial Revolution."

5. Find your state on the map above. Is it an important mining state? Find out, if you can, what minerals are mined in your state and which ones are most important. Is mining more important, or less important, in neighboring states than in your own state?

Coal Mines and Coal Miners

Coal, the giant. Coal is a giant in the amount the world has. The United States alone has tremendous quantities of this vital resource, distributed over wide areas. If the coal fields of the United States were put side by side, they would cover an area larger than England and France together.

Coal is a giant in the amount that is mined each year. If the coal mined in the United States annually should be put in one line of coal cars, there would be a train nearly 80,000 miles long, reaching more than three times around the world.

Coal is a giant in the work it does. It is estimated that far more than half of the world's work is done by energy released from coal. In the United States alone, it would require hundreds of millions of human beings to do the work done by coal.

The use of coal for power is familiar. Equally familiar is the burning of coal for heat in homes, stores, and factories. Much coal, too, is used in making coke, which is very important in making iron from iron ore. As a raw material, coal is perhaps less well known. As such, it is used in making an amazing number of useful things, including nylon, plastics, dyes, aspirin, drugs, perfumes, and paint. Thousands of other products could be added to this list.

It may well be that, in the future, gasoline will be made largely from coal instead of from petroleum. The supply of petroleum is much smaller than the supply of coal. And scientists have discovered that it is possible to make gasoline from coal.

Different kinds of coal. Coal has been formed over a very long period of time. Partly because of differences in the way it was made, one kind of coal may differ greatly from another.

Many thousands of years ago, the material which we know as coal was not a mineral, but was living plant material, such as trees and ferns growing in swamps. As these plants died and others grew, a thick layer of dead plant material gradually accumulated. This is called *peat*. In places the layers of peat became hundreds of feet thick and were covered over with other materials such as sand and mud. This put great pressure on the peat, and under pressure and heat the peat turned to coal.

Differences in the amount of pressure helped to cause differences in the coal. The coal which was formed under least pressure is *lignite,* or brown coal. This is not a very good fuel. Lignite crumbles easily, burns with a heavy smoke, and gives off comparatively little heat. Nevertheless, it is much used in Germany and some other countries. Peat itself is dried and burned in many parts of the world.

Bituminous coal, or soft coal, was under greater pressure than that which produced lignite. Most of the coal used in the world today is bituminous coal.

Greater heat and greater pressure produced hard coal, or *anthracite.* This kind of coal has the advantage of burning with little smoke and leaving few ashes. Anthracite is not nearly so abundant in the world as lignite or bituminous coal.

Three kinds of mines. Strip, shaft, drift—these are names for three different kinds of mines, from which coal and most other minerals are obtained.

A *strip mine* is like a huge pit open to the sky. It may also be called an open pit, or open cut, mine. In this kind of mine, the coal is so near the surface that it can be mined by huge shovels, after the dirt and waste rock are removed. Some of the shovels take as much as 30 tons of coal at a single bite.

Where coal is deeply buried, *shaft mining* is common. A shaft is dug straight down into the earth to the layers of coal. Tunnels are dug reaching out from the shaft. Elevators carry miners down to the tunnels and back to the surface. Many shaft mines, in Europe particularly, reach a half mile or more below the surface of the ground.

Where layers of coal are exposed on a hillside, tunnels can be dug almost on a level back into the hill. This is called *drift mining*.

How miners dig coal. A few short words tell of the first five steps in mining coal in most shaft and drift mines—prop, cut, drill, blast, load. The diagrams on this page illustrate these five steps in a modern mine. Many of the world's miners, however, do not have the help of so much machinery.

The first diagram shows how wooden props are placed in a mine tunnel to make sure that the roof does not fall, while the men are at work. In some mines pillars of coal may be left to support the roof. This saves the expense of wooden props but is wasteful of coal.

In the second diagram a man is "undercutting" the section of coal which is next to be mined. Machines are used for this task nearly everywhere in our country, but are used less abroad. If coal is undercut before blasting, the pieces usually are larger than if the coal is blasted off the solid wall.

Miners drill holes, as shown in the third diagram, so that explosives may be well placed to break loose the coal. The last diagram indicates the result of the blast. Many pieces of broken coal are ready to be loaded.

Years ago, miners would have loaded this coal by hand into a waiting cart, an endless, back-breaking task. Now that work may be done by means of a mechanical loader, as shown in the last diagram. About two thirds of the coal produced in the United States is loaded mechanically. The older system of hand loading is common in most foreign lands.

Loading, of course, is not the last step in mining this coal. Small freight cars filled with coal are hauled over a miniature railroad to the mine shaft, where the coal is dumped out of the cars and is hoisted to the surface. In a drift mine no hoisting is needed, for the coal cars can be pulled directly to the mine entrance.

In a building at the mine entrance, miners clean and sort the coal. Much of this work

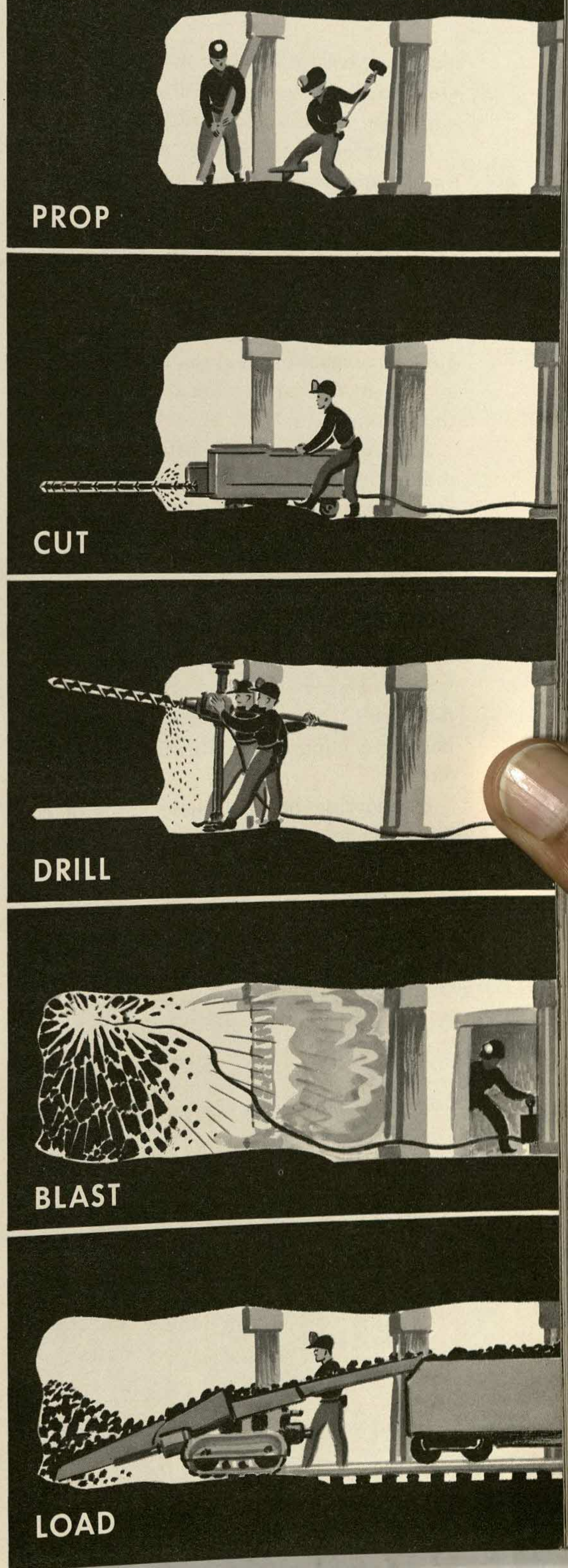


Figure 148. First steps in mining coal →

may also be done with the help of machinery. Only when the sorting is finished, can it be said that the coal is completely mined.

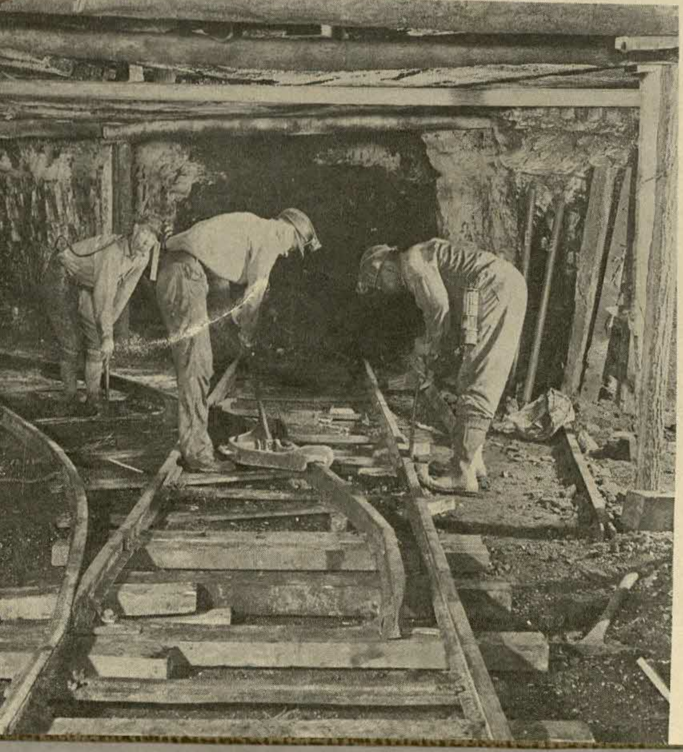
In a large mine, each man is a specialist, for example, a skilled tracklayer, cutter, driller. The three workers in the picture on this page are counted as coal miners, though they do not work directly with coal. Their task is to maintain the tracks of the underground railroad. Both Pennsylvania and West Virginia have more miles of railroad track underground in the mines than on the surface of the ground.

Making comparisons. Bituminous coal is the leading kind of coal mined in the United States. Its production is widely distributed over many states across the country. About 10 tons of bituminous coal are mined for every ton of anthracite.

On the map on page 139, most of the dots in eastern Pennsylvania stand for anthracite miners. Here is the chief anthracite field in the world. The cities of Scranton and Wilkes-Barre are important anthracite mining centers.

Considering both of these kinds of coal, Pennsylvania and West Virginia are the outstanding states, followed by Illinois, Kentucky, Ohio, Indiana, and others of lesser importance.

Figure 149. In a mine near Pittsburgh *John Collier*



In world production of coal, the United States is far out in front. Britain, Russia, and Germany also are important producers.

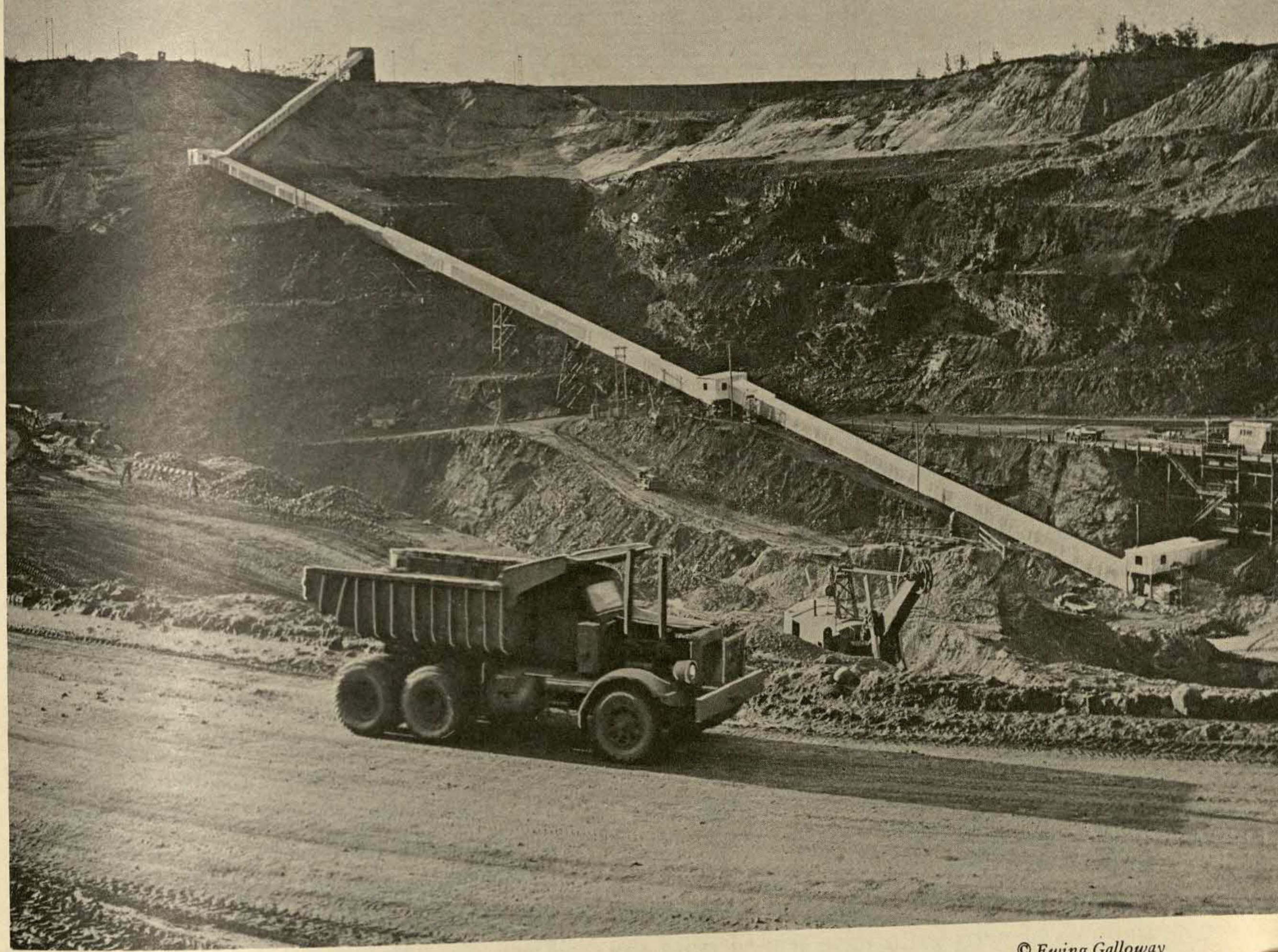
The United States leads the world in the use of machinery in coal mining. This is partly due to the fact that in this country, much of the coal is in thick layers which lie almost level in the ground.

Our country is also one of the leaders in mine safety. In coal mining there is danger of explosions from coal gas or coal dust. To help protect the workers, a continuous supply of fresh air may be pumped through a mine, carrying away the dangerous gas. Rock dust can be forced onto the walls to help prevent explosions from coal dust. The miners themselves may wear goggles, special shoes, and "hard hats." You may have noticed these hats in Figure 149, worn for protection against falling rock. In the same picture you can see wooden props which guard against a cave-in of the roof. These safety measures are helpful, but many problems of safety in the mines remain to be solved.

Iron Ore from the Earth

An open-pit iron mine. An iron miner need never touch the ore, when it is mined as shown in the picture on page 143 (Fig. 150). This open-pit mine is in northeastern Minnesota. An electric shovel, only part of which is shown in the picture, scoops up the ore, tons at a time, and drops it into huge trucks like the one in the foreground. The trucks haul it to the end of the conveyor, which is the long tube-like structure reaching from the bottom to the upper edge of the pit. Within the conveyor there is an endless belt on which the ore is carried. At the upper end of the conveyor the iron ore is dumped into railway cars, which in turn carry the ore to ports on Lake Superior.

Who are the miners in this kind of mine?



© *Ewing Galloway*

Figure 150. Digging iron ore in Minnesota

They are the truck drivers, the operators of the electric shovel, the men who care for the conveyor, and other such workers. There is scarcely any need for the pick and shovel, which at one time nearly all miners used.

Other iron mines. More than half of the world's iron ore is dug from open pits resembling the one shown above. Yet, of course, this one mine cannot represent all iron mines. Conveyors are a rather new development designed to take the place of miniature railroads, which are more common.

In some areas iron ore is buried so deeply that shaft mines are necessary. They resemble somewhat the shaft mines described in connection with coal mining. One advantage of the shaft mine is that work can go on throughout the year, while heavy snows and cold weather may interrupt work in open-pit mines, such as those in Minnesota.

Minnesota is the leading producer of the iron ore mined in the United States. It has the advantage of enormous deposits of ore near the surface. Michigan and Alabama are important producers, also. In the world, the United States is the leader in the production of iron ore as well as of coal. Russia is second, followed by France, Sweden, and Britain.

Why iron is important. In ancient times iron was considered a precious metal. A piece of iron was a gift for a king. Iron jewelry was highly prized. Today iron is one of the least costly metals. Yet it still might well be called a precious metal, in the sense of its value to man.

The Industrial Revolution could not have taken place without iron for the new machines. No other metal can be shaped so easily or so cheaply into such a multitude of forms.

No other metal can so readily be made hard or soft, tough or brittle. The backbone of industry today is iron and the steel made from it. Steel is used in a multitude of ways, from bridges and ships to delicate scientific instruments and precision tools for making tools.

Mining Petroleum

A latecomer. Petroleum itself is not new. It has been in the earth for a long, long time. No one knows exactly how it was formed. But it is generally believed that certain small animals and plants were buried beneath other materials, perhaps millions of years ago. The remains of the animals and plants were under heat and pressure for ages, and because of this, they turned into the oil which we know as petroleum. One writer calls a modern oil field "the graveyard" of animals and plants which lived millions of years ago.

All through the history of mankind, small amounts of petroleum have seeped from the ground, here and there in the world. During most of that history, men made little use of this "rock oil," as it was called. They knew that it would burn, and some was used in a crude way for lighting. On occasion, burning oil was used as a weapon in war. The American Indians thought rock oil was a good medicine. So did the early pioneer settlers. Only in the last 100 years has this mineral resource come to be used extensively.

A great discovery. In the first half of the nineteenth century (1800-1850), there was an ever-increasing demand for oil, particularly for lighting and for lubricating the machines of the Industrial Revolution. At that time, these needs were supplied largely by vegetable oils, by animal oils such as tallow, and by whale oil. Most candles were made of tallow. Whale oil was the favorite for lamps. Small amounts of petroleum, or rock oil, also were used. The supply was extremely limited, however, since men had to depend chiefly on the petroleum which seeped to the surface.

Then the modern oil industry was born. In western Pennsylvania a simple, wooden derrick had been built to help in drilling a salt well. Accidently the owner got some petroleum with the salty water he was looking for. Undismayed, he bottled the oil and sold it as a wonderful medicine.

On one of the advertisements for the rock oil medicine, there was a picture of the salt well derrick and the story of how the well had been drilled. A man by the name of Bissell saw the advertisement. Mr. Bissell happened to know that, if petroleum were refined, it would yield a good oil for lamps. So he hit on the idea of using the salt-well derrick in drilling for oil, guessing that somewhere in the ground were large quantities of oil, if only they could be reached.

A man by the name of Edwin Drake was hired to drill for oil. People laughed when he began to drill down through the rock at Titusville, Pennsylvania. "Drake's folly," they called it. Did he expect to find a fluid in solid rock? Suddenly one day in the summer of 1859 Drake struck oil-bearing rock. More than 20 barrels a day flowed from the well. Nothing more was said about folly.

A mad rush followed the news of the discovery of oil. It was as wild as any gold rush. New wells were dug by dozens, then by hundreds. There were not enough barrels to care for all the oil that flowed from the ground. For a time the price dropped from about $20 a barrel to as little as 10 cents a barrel. Whale oil disappeared from the merchants' shelves. Kerosene made from petroleum came into use. And the kerosene lamp became the chief source of light in most of the world.

Today the world's production of petroleum is measured in hundreds of millions of barrels a year. Oil derricks, now made of steel, have been built in every continent. They stand on Arctic coasts as well as in steaming tropical jungles. But no longer is petroleum used chiefly for light, though millions of homes still are lighted by kerosene. Petroleum is a great source of power in automobiles, trucks, tractors, buses, airplanes, and many ships and locomotives. Petroleum is a source of heat used in millions of oil-burning stoves and furnaces. It is the one great lubricant that oils the wheels of modern industry. Petroleum products are used in making paraffin, vaseline, dyes, medicines, and dozens of other things.

Mining petroleum. In drilling the first oil well, at Titusville, a sharp piece of iron was raised and dropped, raised and dropped, until it punched a hole some 69 feet deep. There oil was found. For years this was the generally accepted way of drilling oil wells, and indeed some wells are drilled in this way today.

Figure 151 shows the method which is most common at the present time. It is called rotary drilling. The two men are fastening a large bit to the end of a "drill pipe." As this pipe is turned continuously, the bit "eats" its way down into the ground. One piece of pipe after another is added, as the bit sinks lower and lower. Finally the "pipe string" may be a mile or more in length, reaching straight down into the earth. The derrick shown in Figure 152 is needed especially for handling the long sections of pipe which must be raised on end before they can be started down into the well.

Signs advertising "fishing tools" are often seen in towns near oil fields. These tools have nothing to do with trout or bass. A bit or a drill pipe may break far down in the earth. It is exceedingly difficult to "fish out" the piece which is broken off. That is what these special "fishing tools" are used for.

When the bit strikes rock that contains petroleum, the oil may rush to the surface with a roar, because of an enormous pressure on it. In most cases the oil flows out slowly or must be pumped out. The average oil well produces less than 10 barrels a day. The spectacular "gusher" is not a typical well.

Deciding where to drill. No one knows for sure where in the ground oil can be found. Men know that the presence of petroleum depends on the underlying rock, not on what is seen at the surface. There can be oil in the earth only where it has been trapped and held by particular kinds of rock.

Figure 151. Drilling for oil *Courtesy Standard Oil Company*

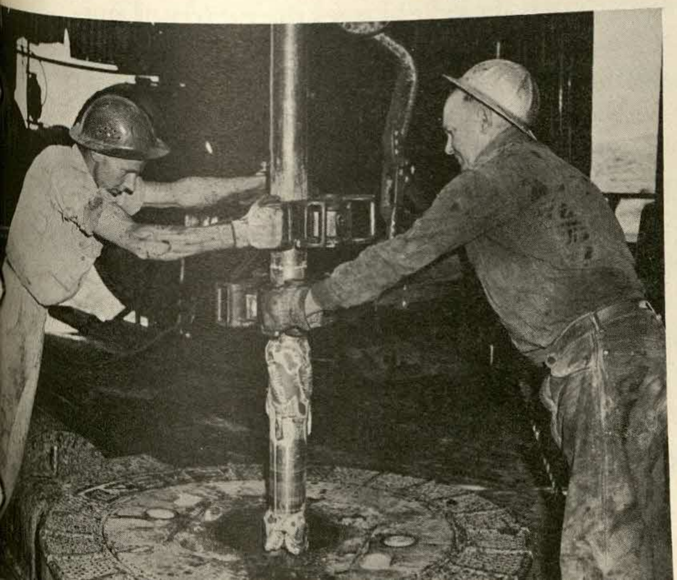
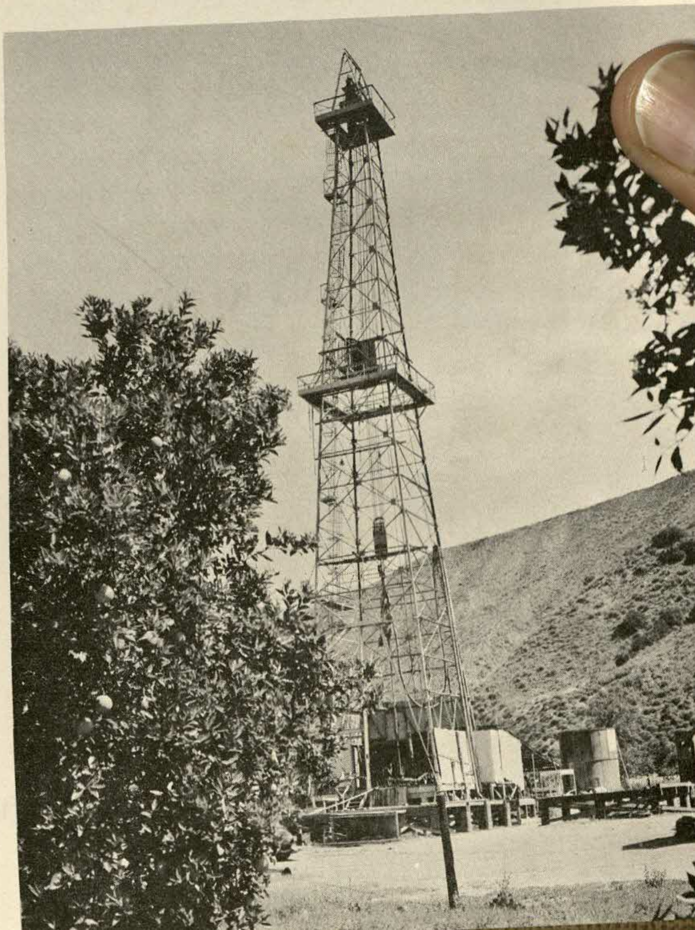


Figure 152. An "oil mine" *Courtesy Standard Oil Company*



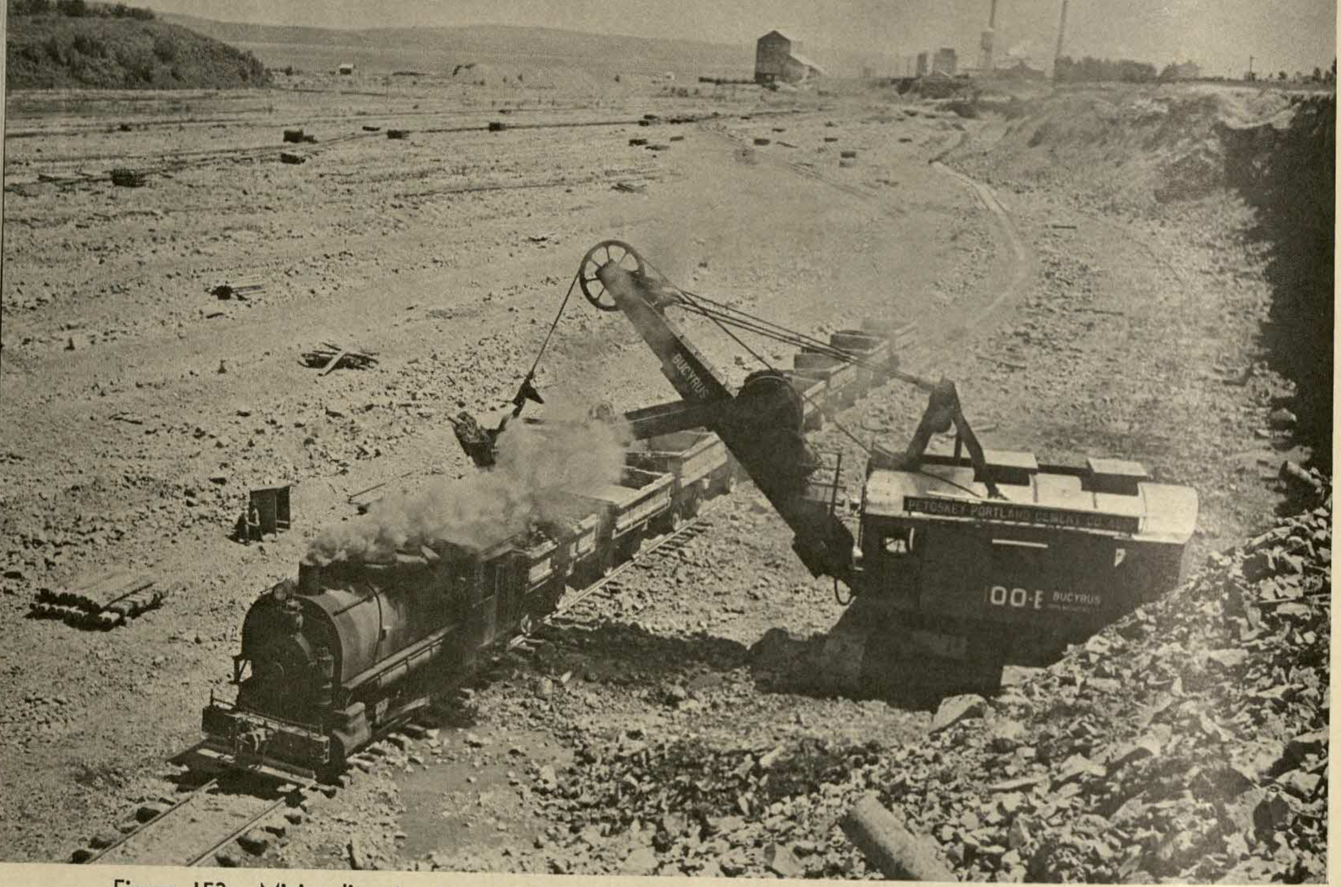


Figure 153. Mining limestone

Photo by author

The modern oil explorer is a scientist who knows much about the structure of the underlying rock. Even he cannot say with certainty that in a particular place oil will be found. But from his studies of the rock structure he can mark off areas where it is possible that there may be oil.

Leaders in the production of petroleum. From Drake's folly until today, the United States has led the world in the production of petroleum. Texas, California, Louisiana, Oklahoma, and Kansas are the leading five states. Next to the United States in oil production is Venezuela, followed by Russia, Saudi Arabia, Kuwait, and Iran.

Other Minerals, Mines, and Miners

Stone, clay, sand, and gravel. Think for a moment of the many millions of buildings that are made of stone, brick, or concrete, or of the many miles of paved highways, or of glassware and pottery in the world today. Stone, clay, sand, and gravel are so familiar to many of us that we may overlook their importance. But man would certainly find it difficult to get substitutes for them.

In the United States, limestone is the most valuable of all stones quarried, and has more uses than most. It is used to fertilize the soil; it is used in changing iron ore to steel; and it is an essential part of cement. The picture above shows how limestone is mined in northern Michigan. The railroad track is extended as the great shovel enlarges the quarry. Limestone is mixed with slate or clay in making cement. In making concrete, cement is mixed with sand, gravel, or crushed rock. More cement is made in Pennsylvania than in any other state.

From very early times, man has made bricks and pottery from clay. Making glass from sand is also an old story.

Gold, silver, diamonds. Many stories have been written of the old-time prospector who, with a burro and a few tools, roamed the mountain valleys in search of gold. Not all the prospectors have disappeared. Figure 154 shows a modern prospector in Alaska. He has dug some likely looking sand or gravel from beside the stream and is washing it to see whether it contains gold. Most gold is not mined in this way, but comes from shaft mines not unlike the one shown on page 141.

Silver, like gold, has been a familiar metal for coins. There is silverware for the table. Dentists use both gold and silver. Less well known is the use of silver in making photographic film. This takes huge amounts each year. Both gold and silver are used extensively in making watches and jewelry.

Of the precious stones the diamond is most widely used. As a jewel, it has great beauty and brilliance. Many diamonds, also, are used in industry. These are not highly polished, but, because of their hardness, they are used in tools for cutting very tough materials, such as steel.

Copper. The peoples of ancient times knew how to make utensils and weapons of copper. They also knew how to mix copper and tin to make bronze, and copper and zinc to make brass. Through the years copper has been used in making many different kinds of things. During the last 100 years, with the development of the electrical industry, the use of copper has increased tremendously, for it is a fine conductor of electricity. The United States is the leading producer of copper.

Tin. More tin is used in the United States than in any other country, but almost none of it is mined here. Most tin ore comes from Malaya, Indonesia, and Bolivia.

In Figure 155, women are sorting ore at a Bolivian tin mine, high in the Andes Mountains of South America. At this mine, mechanical power is expensive because of a shortage of fuel, but hand labor is cheap.

Tin is used for many things. More than half of the tin produced goes into such items as roofing, solder, and automobile radiators.

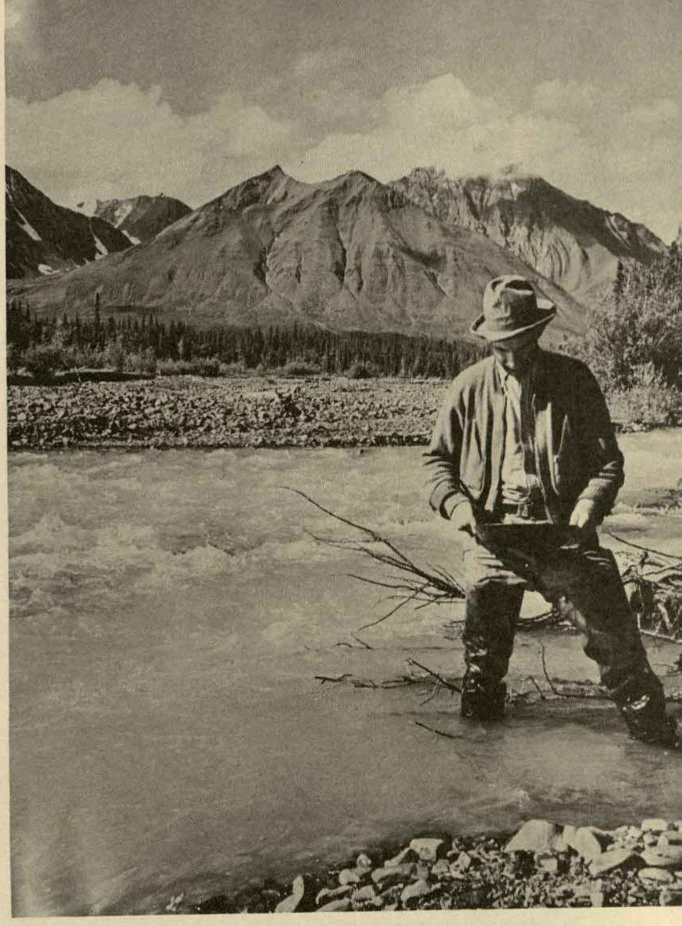
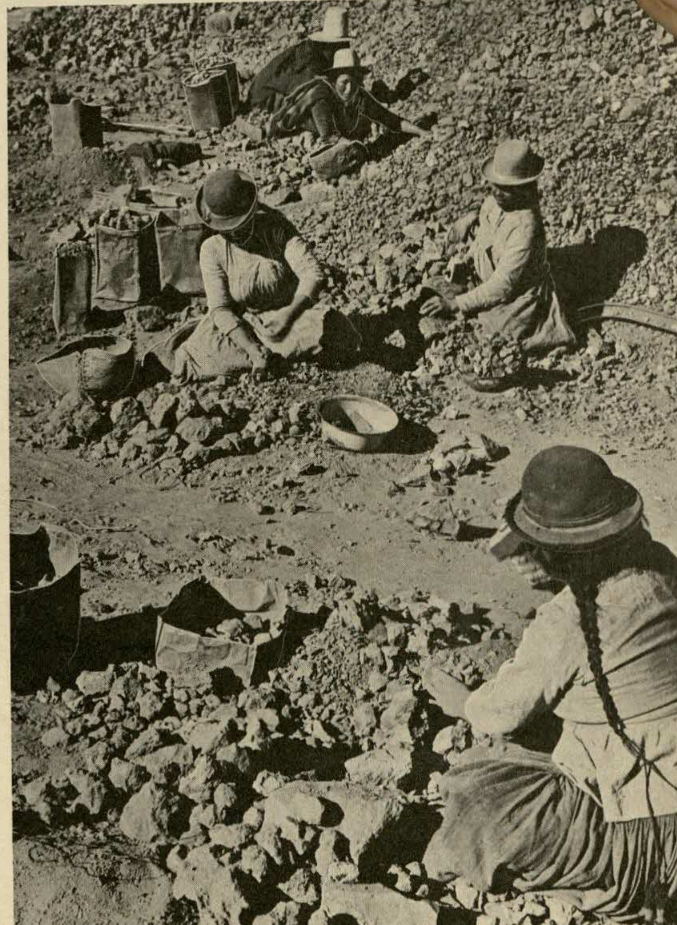


Figure 154. A modern prospector © *European*

Figure 155. Sorting tin ore © *Three Lions*



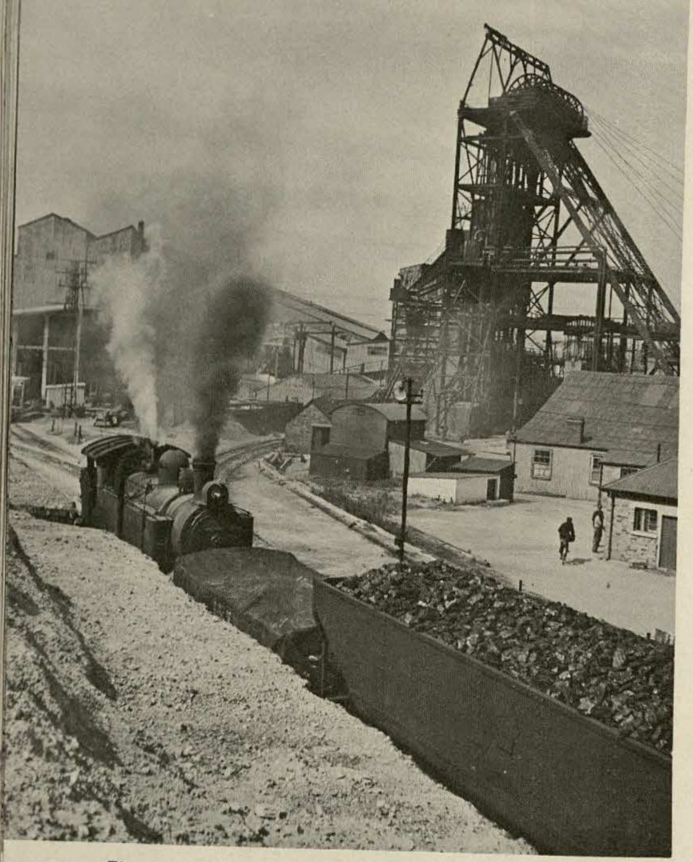
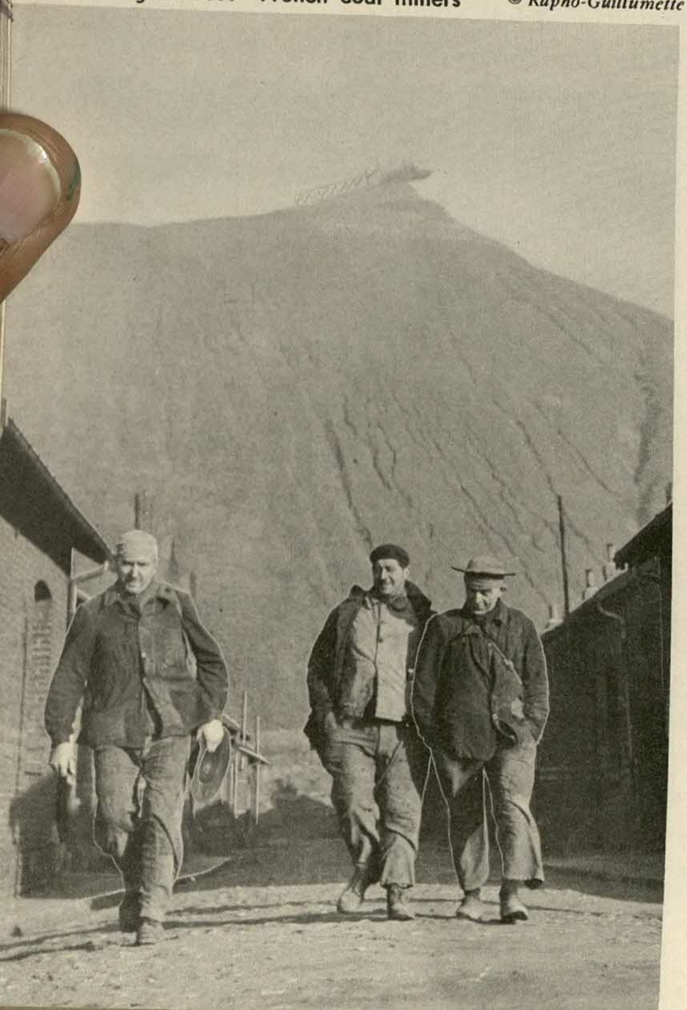


Figure 156. A big mine in Africa © *Three Lions*

Figure 157. French coal miners © *Rapho-Guillumette*



The familiar tin can is really a steel can very lightly coated with tin.

Other minerals and their uses. Many other minerals have important uses. Natural gas, in places found with petroleum, is one of the great fuels. Nitrate, phosphate, sulphur, and potash are all used in making fertilizers. Lead has played a big part in education, for the metal type from which books are printed contains much lead. Lead also is one of the substances in storage batteries, radio tubes, and anti-knock gasoline. Aluminum, obtained from bauxite ore, may be shaped into things as different as kitchen utensils and airplane wings. Salt is used in many ways: in preserving food, in manufacturing certain chemicals, and in tanning leather, to mention a few. And the minerals pitch-blende and uranium are basic resources for making atomic energy.

Special mention must be made of the "mixing metals," such as chromium, manganese, nickel, tungsten, and vanadium. These as well as other metals are used in making steel of special qualities. The addition of a very small amount of chromium or nickel, for example, may greatly increase the hardness of steel. In fact the wide use of steel in modern industry depends much on these mixing metals.

The Chief Mining Regions

Round the world. Though the work of mining is widespread in the world, several areas are outstanding. This we can judge by the placement of the red triangles on the map on pages 136-137. One of the chief mining regions is in the United States and southeastern Canada. Another, as the map shows, follows the Andes in South America. Still another is in southern Africa, where there are great resources of gold, copper, and diamonds. The African mine shown in Figure 156, uses machinery as modern as that in any land.

Another great mining region is in western Europe and the Soviet Union, an area rich in coal, iron, and many other minerals. Figure 157 shows three French coal miners going home from work at the end of the day. The hill in the background is a huge pile of waste rock that has accumulated over many years.

Russia has rapidly become more and more important in mining. One reason is that explorers have discovered new and extensive mineral deposits in Siberia. In Figure 158, a Russian miner is drilling in an open-pit gold mine in Siberia.

In the India-Pakistan peninsula and in the Far East, full use has not yet been made of the vast mineral resources, although there is some important mining in Japan and in the peninsula, for example. But as is indicated by Figure 159, modern machinery is not widely used in mines in the Far East.

No one has all. Only a few minerals are found in abundance in all the continents. These few are the common minerals, such as rock, sand, clay, and gravel. Most other minerals are distributed very irregularly. For instance, there is little coal south of the equator. Africa is almost without petroleum. Every industrial nation, then, must depend for some minerals on other nations.

Conservation of Mineral Resources

A robber industry. Mining is known as a robber industry, because it always takes away. It never puts back. Though operated with the greatest care, every iron mine must some day be abandoned. Every oil well will run dry, in time.

Even if unwisely used, there is a chance that natural resources other than minerals can be restored. The birds, wild animals, and fish may be almost gone, yet, if given the opportunity, they may increase again. Grasslands may be over-grazed, but with care they can be improved. Soils that are washed away cannot be replaced, but soils partially worn

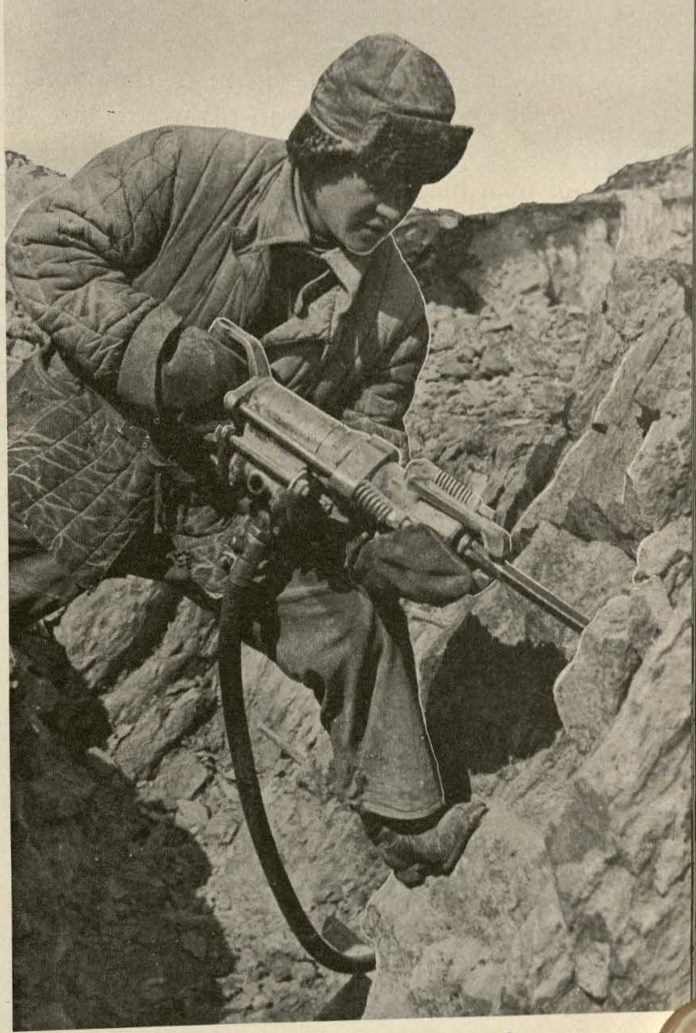
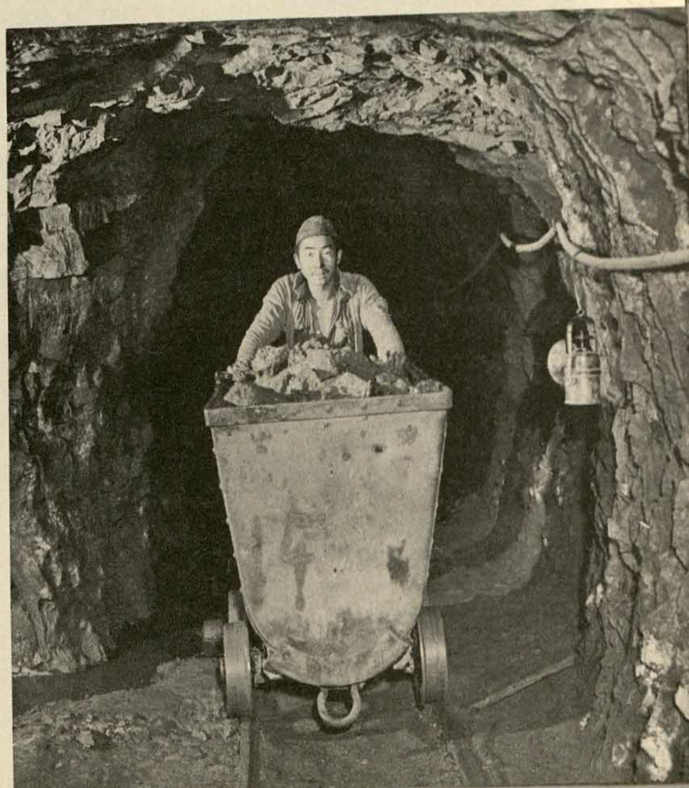


Figure 158. Mining gold in Siberia © *Sovfoto*

Figure 159. A Chinese miner © *CNS Photos, Paul Guillumette, Inc.*



out can be built up again, in time and at great expense. Man can plant new trees to replace old ones. But nothing in the power of man makes it possible for him to restore the minerals that are used up. As far as he is concerned, they are gone forever. There never is a second crop.

What to do. Conserving mineral resources does not mean that man should stop using them. But present needs should be balanced against the needs of future generations. The people who will live on the earth 100 years from now have a right to their share of its mineral wealth. We would not think it was fair if the people of 100 years ago, for example, had used up all the coal and left us none.

Conservation is the opposite of waste. Too often, because of carelessness, coal has been left in the ground; petroleum has flowed into rivers; natural gas has escaped into the air. People also have used fuel wastefully, after they had it in their homes. Increasingly, men are seeing that waste of all kinds must be prevented.

A wider use of the more abundant minerals instead of the scarcer ones, when there is a choice, is also a way of conserving resources. Actually, the world has such an enormous supply of some minerals that they may be considered inexhaustible. These include stone, clay, sand, gravel, and salt. This abundance makes the future less dark than it otherwise would be. For these abundant minerals may provide substitutes for some of the scarcer materials. But no one believes that they can ever replace such essentials as iron, coal, and petroleum.

Helps in Learning

1. Tell in your own words the story of how coal was formed and why there are different kinds of coal.

2. Have you ever seen a mine? In what ways is it like the mine described on pages 141-142? In what ways, different?

3. Explain three ways in which "coal is a giant."

4. What fuel is used in your school building? Is it a mineral fuel? If so, try to find out where it was mined. Then make a list of the various workers who may have helped get the fuel from the mine to the stove or furnace.

5. Iron is said to be the backbone of industry. Give several examples to show ways in which this is true.

6. What is meant by "petroleum–a latecomer"?

7. The work of whaling declined sharply after petroleum was discovered. Why?

8. How do men decide where to drill oil wells?

9. Find illustrations to show "that the modern world uses a great variety of minerals, that one mineral may have several different uses, and that the use of one mineral may depend much on the use of another."

10. Someone has said that mining is like continually drawing money out of the bank, without putting any in. Explain what this means.

11. Find out, if you can, whether there is anything that could be done in your home or in your community to help in conserving mineral resources.

12. "Every industrial nation, then, must depend for some minerals on other nations." Give several examples to show that this is true.

A Living in Town and City

We have seen clearly that the people who work directly with natural resources depend on these resources for a living. We can see, also, that everyone else depends upon these workers for the basic needs of life—for food, for the wool and cotton used in our clothing, for the materials that go into the houses in which we live. Important as this kind of work is, we shall find some places in the world where only a few of the total workers are engaged in working directly with natural resources. In the United States, for example, four people out of five live in towns or cities.

It is not easy to understand why so many people live in towns and cities. We can see, of course, that man can use few things exactly as they come from nature. Wheat must be ground into flour, hides and skins must be tanned, iron ore must be changed from a shapeless mass into useful tools. We can understand that those who work with natural resources depend, also, on the work of other people. We can appreciate the importance of transportation, for we see goods and people being transported by land, by water, and in the air. We know that many people are needed to look after the affairs of government, education, health, and recreation. Yet, easy as it is to understand these separate parts of our modern life, it is not so easy to understand how all these things fit together.

The chapters on *A Living in Town and City* will help to make the picture of modern life more complete. Without understanding what goes on in a city, we cannot even begin to understand the kind of complex world we live in today. For most of the people who are engaged in manufacturing, trade, transportation, and various special services live in towns and cities.

As you study these chapters, you will understand more clearly how these workers depend on the people who work with natural resources. At the same time, you will see how those who work with natural resources depend upon city workers, and how city workers depend upon each other. Finally, you will see that the kind of work that goes on in a city is another part of the foundation on which our civilization is built.

THIS IS THE CITY

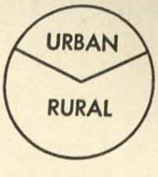
Different ways of looking at a city. The biggest thing that man has built is the city. In the picture of New York, opposite, you can see the sky, but you cannot see what the land is like. The buildings, great and small, and the concrete pavements almost completely hide the face of the earth.

What natural resources could once have been seen in this place—good soil, perhaps, or tall trees, or waving grass? We cannot tell. Nature's gifts have disappeared. Man's work now covers the land.

Not all people look at cities in the same way. To some, the city is a place of glamour—bright lights, interesting people, excitement, opportunity, and wealth. To others, it is a place of noise and confusion, a place of poverty, crime, and overcrowding. To one group, the city is a magnet, drawing people from far and near. To another group, it is a place from which one should escape, whenever possible, to the green countryside.

We all know, of course, that neither of these ways of looking at the city is entirely right or entirely wrong. Actually a modern city is very complex, perhaps as complicated as anything on earth. And it may be, too, that cities are as little understood as almost anything on earth.

How can we understand a city? A broad understanding of the city is not gained by listing what one likes or does not like about it. Neither does understanding come from merely looking at the streets and buildings. In the picture on the opposite page, for example, it would help us only a little if we knew exactly the number of stories in each building and of what material each building was constructed. It is of far greater importance to learn how people in these buildings live and make a living. What connection is there between one man's work and another's? How is life in the city related to life and work in the surrounding countryside? In what ways do city people depend on natural resources? Why was the city built where it is?



The full circle stands for all the people of the world.

Figure 160

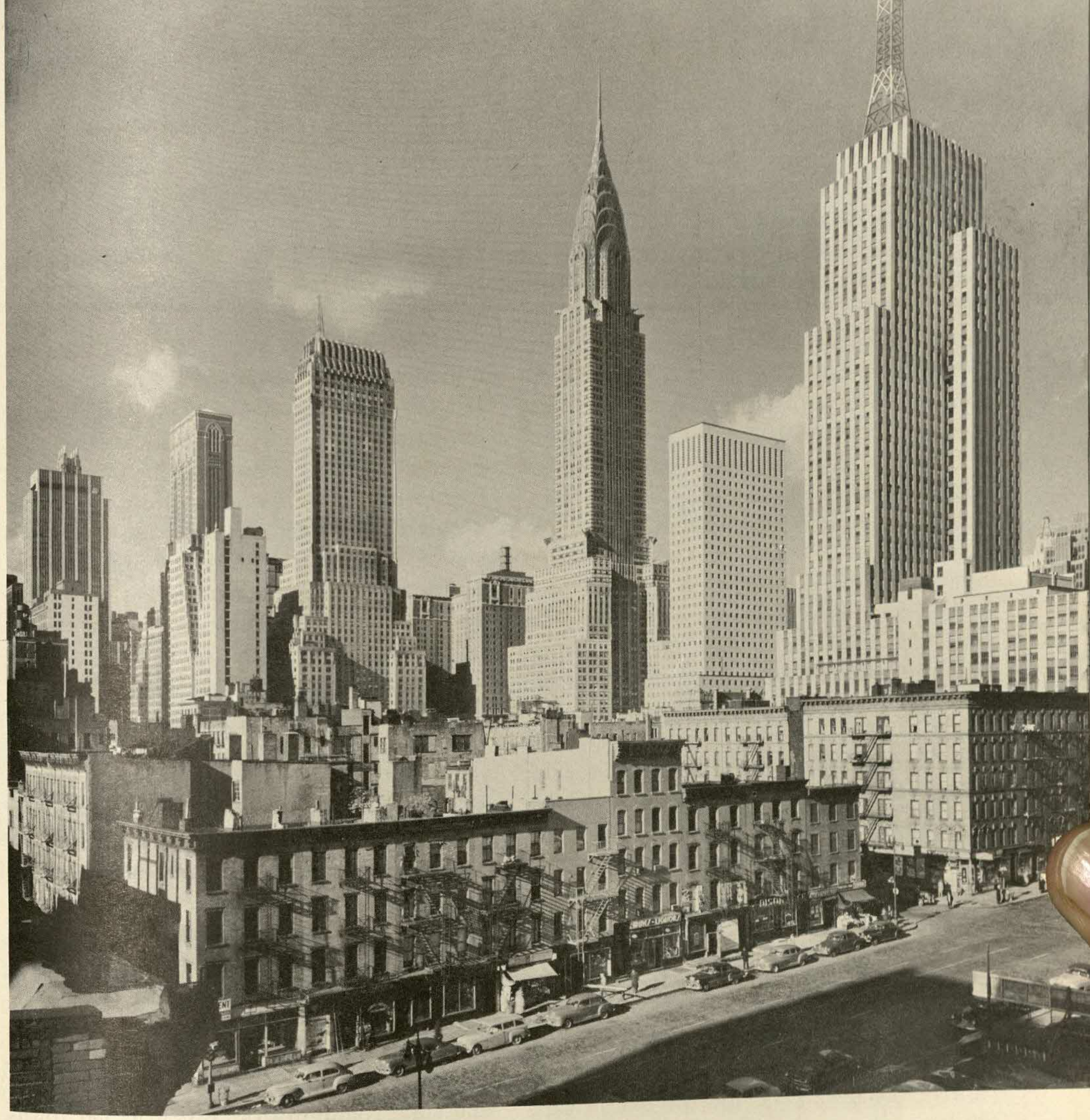
Asking and answering questions of this kind will help us get an understanding look, such as that described earlier (p. 9).

Urban and rural. The two words, urban and rural, are used frequently in comparing the city with the country. *Urban* refers to the city; *rural* to the country.

Considerably more than half of the people in the world live in rural areas, as you can see by the graph on this page. These, with few exceptions, belong to the groups described in the preceding chapters: hunters, trappers, fishermen; ranchers and herders; farmers; forest workers; and miners. In this chapter we shall try to look with understanding at the urban people in the world. In some countries, including the United States, the urban people far outnumber the rural.

Questions frequently have arisen about the exact meaning of words that are used to describe settlements, particularly the words urban, rural, village, town, and city. Is a village urban or rural? Is a small town rural? How does a small city differ from a large town?

Different people have given different answers to these questions. The people of Illinois would call a small settlement of 200



© Devaney, Inc.

Figure 161. Part of New York City

people or so a town. In another part of the country such a settlement might be called a village. In some states, a settlement may have a village form of government, though it looks like a city and is as large as some cities. In Asia a farm village may have a population of several thousand.

In a general way, however, we may think of a village as a small settlement, where most of the people make a living directly from the natural resources. A town may be considered as somewhat larger, and a city a large and complex unit. In towns and cities, most people make a living from manufacturing, trade, and transportation.

Most of the rural people of the world live in villages or in the open countryside. Most of the urban people live in towns and cities.

How Towns and Cities Grew

A village becomes a town. You will recall reading that some men who had been food collectors or wandering herders settled down to farming (p. 52). In most cases, they probably chose to build their houses close together, perhaps because as members of a tribe or clan or family group, they were accustomed to living together. Perhaps they did it for protection, perhaps in order to be near a good supply of water, or perhaps because they liked the company of other people near-by.

In those early villages nearly everyone lived from farming. There was little trade, for each family grew its own food, gathered its own fuel, and made such tools and clothing as might be needed. Later, it appears that some men became particularly skilled at doing certain work. For instance, one farmer may have been especially good at making stone sickles. Another farmer who had little skill in such work would gladly exchange a little extra grain for a new sickle. Then another farmer might ask to do the same, and another. Gradually, the village would come to have a full-time sickle maker, who got food and fuel from the farmers in return for the sickles he made.

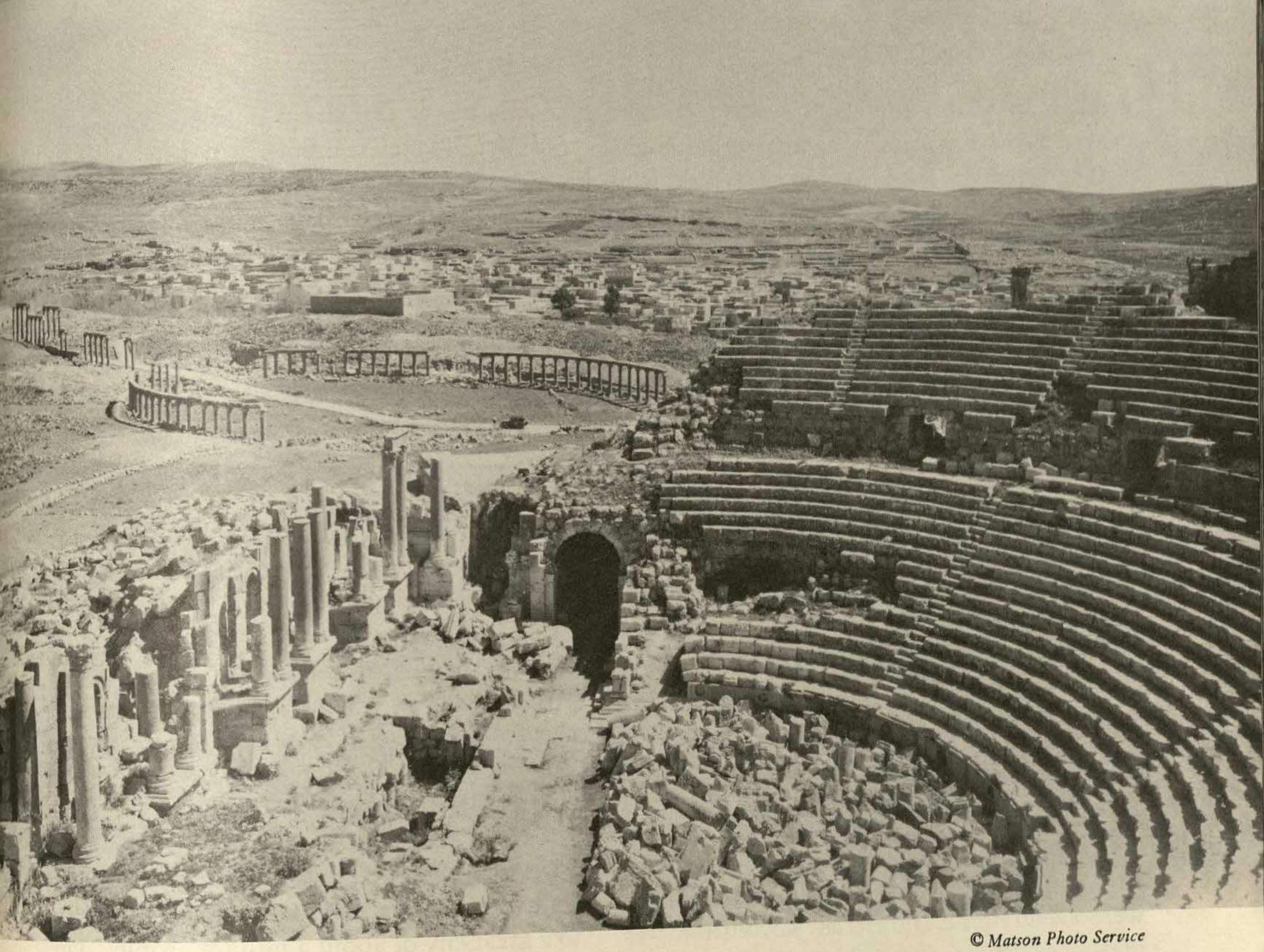
Similar changes came in other lines of work, until there were weavers, bakers, carpenters, metal-workers, and the like in various farm villages. As time went on, the fame of the craftsmen in one village might well spread to other settlements round about. Farmers from several villages might thus be attracted to one central village for particular needs. If this went on, still more craftsmen would find it desirable to work in the established center. And some other men would find it profitable to turn from farming to carrying loads for pay or to keeping inns for travelers or to trading one kind of goods for another. Finally, the special workers would outnumber the farmers. The central settlement would be considerably larger than surrounding villages. Perhaps in this way a village became a town.

A town becomes a city. Not all the early towns had equal advantages. One might be located in a narrow valley, where it could draw trade from only a small territory. Another might be at a river crossing or a natural crossroads, where it was easy for people from a wide area to meet and trade. A king might choose a town, otherwise not important, as his capital or as a place to station part of his army. Any one of these advantages might help a town grow into a city.

Life in the city was necessarily somewhat different from life in villages and towns. In the smaller settlements, people could grow their own food, if they wished. It was only a short distance to the fields. In many cities, however, people had to depend chiefly on food which others grew, and which might have to be brought long distances.

People who lived in cities discovered that they were not only dependent upon farmers and others who lived outside the city, but also dependent in many ways upon each other. There was group control, or government, of some kind, of course, even in small villages and rural communities. But in larger towns and cities, government was necessarily more complex. Many rules and laws were needed. The government took over for the group as a whole certain tasks, too, that might otherwise have been cared for by the individuals themselves. For example, certain people were paid to guard the city; other people worked to supply the entire city with water. These are simple examples of the ways in which people in cities cooperated with each other.

Jerash, a city of ancient times. Even in ancient times there were cities of considerable



© Matson Photo Service

Figure 162. A city that died long ago

size. Some have lived until the present time, Rome and Athens, for example. Others died out and were abandoned long ago.

One of these dead cities is shown in the picture above. It is Jerash, a once-famous caravan city near the modern city of Amman, Jordan (pp. 386-387). Comparatively few people know about Jerash today. But a little more than 2000 years ago, Jerash was a bustling city, known to traders far and wide.

The theater of ancient Jerash is shown in the foreground of the picture. Beyond this, there is a half-circle of tall columns that mark a great plaza, or forum, as it was called, in the center of the city. If you look closely, you can see an automobile near these columns. The small village beyond the columns has grown up in modern times.

The forum must have been a fascinating place when Jerash was a thriving city. In a single evening a dozen different languages could be heard, as travelers gathered from as many countries. The different costumes of the travelers would suggest in many ways the lands from which they came—Greece, Ethiopia, or Persia, for example. The Roman soldiers strolling through the forum may have been stationed in the city permanently.

A shout goes up from the crowd in the forum as a dusty camel caravan comes out of the darkness into the lighted city, then disappears into a caravansary. This is a large inn where both men and animals are cared for. There was great interest in the caravans that came and went, for the chief support of Jerash was trade.

From Jerash to New York. The people of ancient Jerash probably thought their city would always be there. But the caravans shifted to other routes. The traders no longer came to Jerash. The people of Jerash who had depended upon this trade moved away, and the city died. For centuries goats have grazed in what was once the busy forum.

Ancient times gave way to medieval times and then to modern times (p. 24). Men continued to build cities. Here and there they abandoned them. Some were destroyed by floods or earthquakes; some by war. The natural resources upon which some cities depended were used up. Some died because they no longer served a useful purpose. New cities were built as men settled new lands, developed new trade routes, and discovered new resources or new ways of using resources.

Little by little men improved many of the cities which they had built. The picture on page 157 shows a street in New York about 1800 A. D. The style of building little resembles that of Jerash. Water supply and sewage disposal were undoubtedly superior to those of ancient times. But great changes were ahead. The Industrial Revolution was getting under way in England. In time, it was to affect most of the cities of the world.

How the Industrial Revolution affected the growth of cities. The Industrial Revolution, as you will recall, began when men discovered new sources of power and put this power to work turning machines in factories. Many changes followed. For one thing, many cities increased enormously in size.

The use of power-driven machinery helped cities grow. As factories increased in number, there was a great demand for more machines and for more and more workers to operate them. At the same time it was becoming less profitable to make many things by hand. So in England, for example, hundreds of thousands of people left their rural homes and flocked into the cities to live beside the ugly new factories. Naturally, cities grew in size by leaps and bounds.

During the same period of time the total population of the world itself was increasing rapidly. The development of science which had helped bring about the Industrial Revolution also helped men conquer some of the diseases which had taken many lives in earlier years. So more people lived and lived longer than formerly. This gain in population also had its effect on the size of cities.

How could all these city people be fed? The development of science and the Industrial Revolution itself helped solve this problem. Improved methods of farming and new machinery made it possible for farmers to produce more food than ever before and with fewer workers. Furthermore, the power of steam was applied to ships and trains. By these new means of transportation, food could be carried halfway round the world almost as cheaply as it once had been hauled from town to town. So cities kept on growing.

How Baltimore grew. The growth of modern cities is well illustrated by the story of Baltimore, Maryland. During less than two centuries it has changed from a mere village to a great city of about a million people. The maps at the bottom of page 157 show various stages in its growth. On these maps, the black areas stand for built-on land. The city boundaries and transportation routes are those of the present time.

A picture of Baltimore in about 1750 would show 25 houses, a school, and a church. It was then a little village of less than 200 persons. In the years that followed, trade and manufacturing increased. The harbor gradually grew in importance. Cotton and rice came by boat from various southern states, for export to Europe. Ironworks, brick kilns, and furniture factories were built in the community. By 1800 Baltimore was a small but thriving city of some 26,000 people.

The first railroad cars in Baltimore were pulled by horses. Then in 1830 the steam locomotive appeared. Steamships, too, came into use for ocean trade. As ocean and railroad transportation improved, the trade of

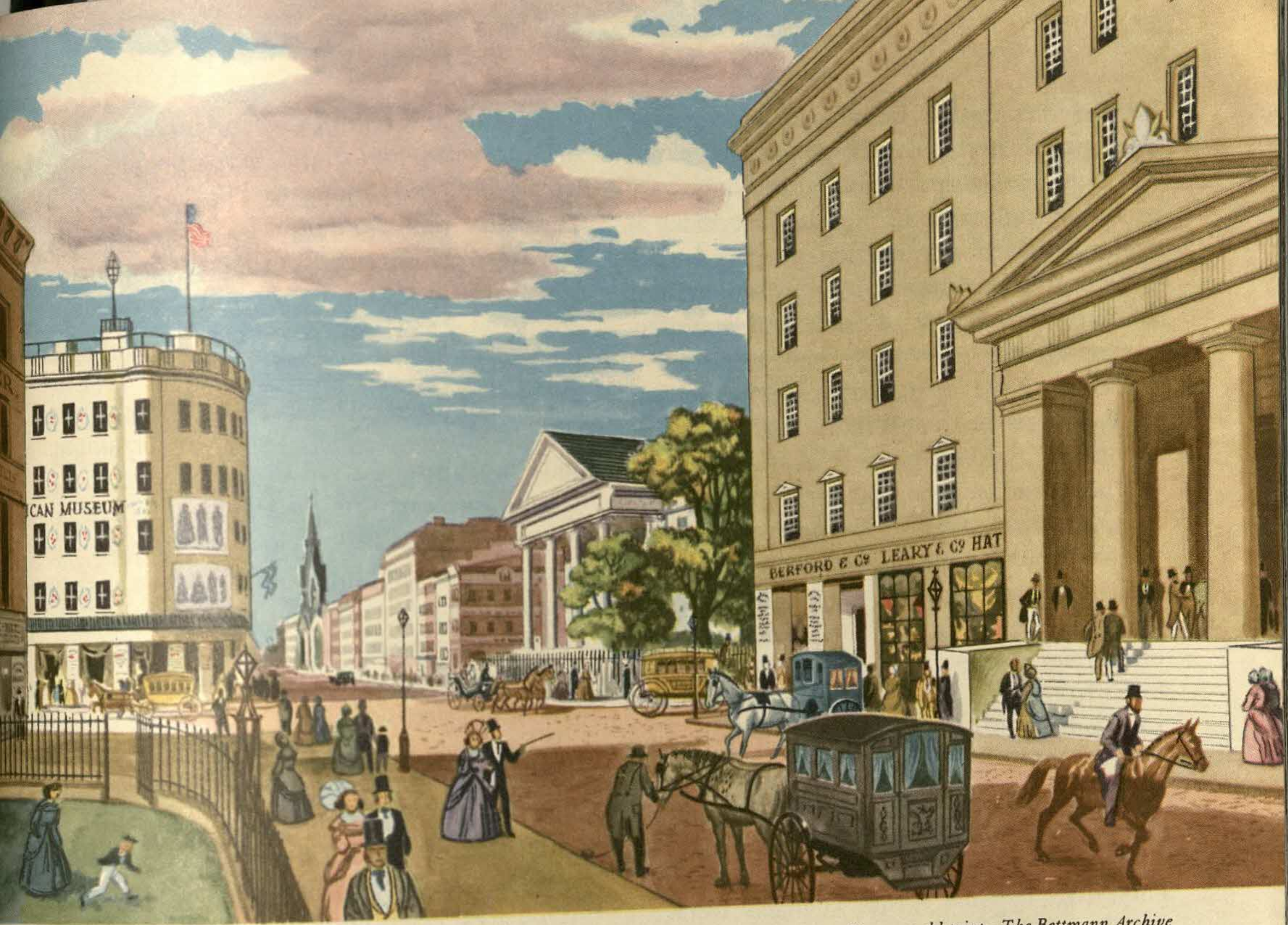


Figure 163. When New York was a small city

From an old print—The Bettmann Archive

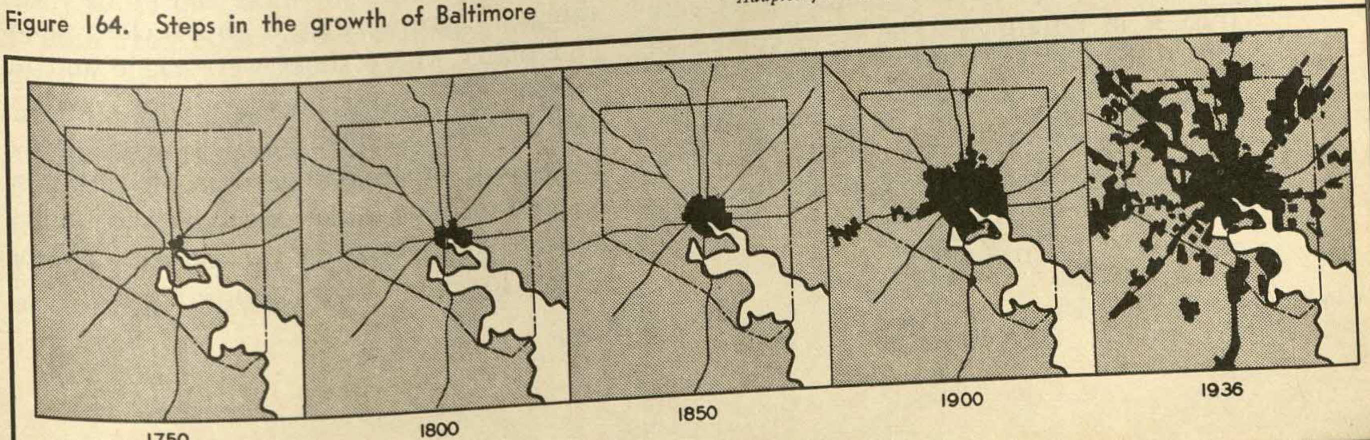
the city grew. More factories were built to supply the goods needed in other parts of this country and abroad. The improved transportation brought to the people of the city the food and goods that the growing city needed.

By 1900 Baltimore was a city of half a million people and had spread far indeed beyond the boundaries of the original settlement. People were coming from other countries to work in the factories and on the farms near-by. The immigration of people from other lands has been an important factor in the growth of many other American cities, also.

After 1900 the automobile brought many changes to Baltimore, as it did to all cities in this country. The last map shows that there are now many patches of built-on land

Figure 164. Steps in the growth of Baltimore

Adapted from map by Maryland State Planning Commission



beyond the present boundaries of the city. Some people in these outlying areas are served by highway transportation only. Some are served by railroads, also. Baltimore today is a city of nearly one million people. It is a great center for shipping by land and sea, and an important center of trade and manufacturing.

In Baltimore, as in most American cities, settlement is not continuous, either within or outside the city proper. The pattern of built-on land suggests ribbons, or long fingers, which reach far out from the city center. As we should expect, this pattern of settlement follows closely the pattern of railroads and highways leading to and from the heart of the city. Many thousands of workers live miles from their jobs. This would have been impossible in the old days, when men had to walk to work. So the modern city depends much on local transportation as well as on connections with distant places.

How New York has changed. New York City, like Baltimore, has changed tremendously in the past 150 years. The small city, part of which is shown on page 157, has become one of the world's greatest cities. There now are more people in New York than in Sweden or in the continent of Australia. The hotels in the city have rooms enough to take care of more than 100,000 people at one time.

Like most modern cities, New York has changed in more than size. This is clearly seen by comparing the picture on page 153 with the picture on page 157.

The two pictures tell of striking changes in power and in transportation—animal power versus mechanical power, carriages versus automobiles and trucks. Another sharp contrast is in buildings. The New Yorkers of 1800 little dreamed of the skyscrapers shown on page 153. The steel framework in the skyscrapers and the electric elevators which carry people up and down are as much gifts of the Industrial Revolution as are the automobiles in the streets.

As trade and manufacturing increased during the years, more and more people came from other lands and settled in the city. New York, like many other large cities, is a city of many different neighborhoods. As in many other cities, too, thousands and thousands of people who work in New York live in towns and cities near-by.

The passing years have also brought new kinds of work to New York. For example, there is a filling station in the picture of the modern city. In 1800, it would have had no business, for a filling station depends on trucks and automobiles, just as much as they in turn depend on the filling station. This is another reminder that great changes rarely stand alone. Nearly always they are closely related to other changes.

What every city needs. Cities, then, are living things, that change with the times. But regardless of how much they change, they cannot escape certain "musts." These are the essentials without which no city can stay alive.

One great essential is *food*. Day by day the caravans brought grain to the city of Jerash. If the caravans had stopped, the city would have died. Big, powerful New York City would starve in a matter of weeks, if the flow of food were entirely shut off. *Water*, too, is an essential that every city must have.

In every city in which there is manufacturing, *raw materials* are on the list of "musts." Cloth or shoes or tools must be made of something. And, in general, this something cannot be produced within the city.

City workers must have a *market* for their goods and services. In Jerash there were men who made saddles and tents, among other things. There were grain shops, cloth shops, and places where shoes were made and repaired. There were inns, ready for travelers. But workers in Jerash could not have made a living unless there had been people, also, who wanted to buy saddles or cloth, who wanted to have shoes repaired, or who were willing to pay for rooms at the inn.

Transportation is another essential in the life of a city. The people of New York need the surplus food of the farmer in the city, not on a distant farm. Farmers need their new shoes or tools where they live, not in the factory. The connecting link is transportation, whether by camel caravan, motor truck, steamship, railroad, or airplane.

Actually, there is a long list of "musts" for the modern city. In ancient times each home provided its own light. Each man supplied his own power for making shoes or for weaving cloth. The government of the city was relatively simple, too. Now, however, power, electricity, disposal of garbage and sewage, a complex system of government, a highly organized system of education, hospitals, and many other services may well be added to the "musts."

The Urban Area

Two New Yorks. There are two New Yorks shown on the maps at the right. The smaller one (Fig. 165) is marked by the official boundaries, the limit of the authority of the city government. It has between seven and eight million people. But these official boundaries do not represent the edge of New York as a city community. In the New York area, as in Baltimore, urban settlement has long since spread out beyond the city limits to surrounding lands. This entire urban cluster is sometimes referred to as the urbanized area. It has a population of more than twelve million people.

The urbanized area of New York reaches many miles out from the heart of the city. It even reaches across state lines into Connecticut and New Jersey. The people of this area thus live under many different local governments, though many of them may work in New York City. Their mail is addressed to them in dozens of different towns and cities. Yet they have many interests and problems in common. They belong to one huge urban settlement. In a very real sense, therefore, it may be said that they live in a single city—the New York urbanized area.

Urban areas. In this book, the words *urban area* will be used generally to describe any place of urban settlement, without regard to official city boundaries. When we speak of the New York urban area, we mean the New York urbanized area, as shown on the map. When we speak of New York City, we mean the smaller area within the official city boundaries.

The map in Figure 166 is based on the work of the United States Census. In connection with the census of 1950, maps were made of the "urbanized area" of many cities. The word urbanized refers to the entire area in and around the city that is a built up, thickly

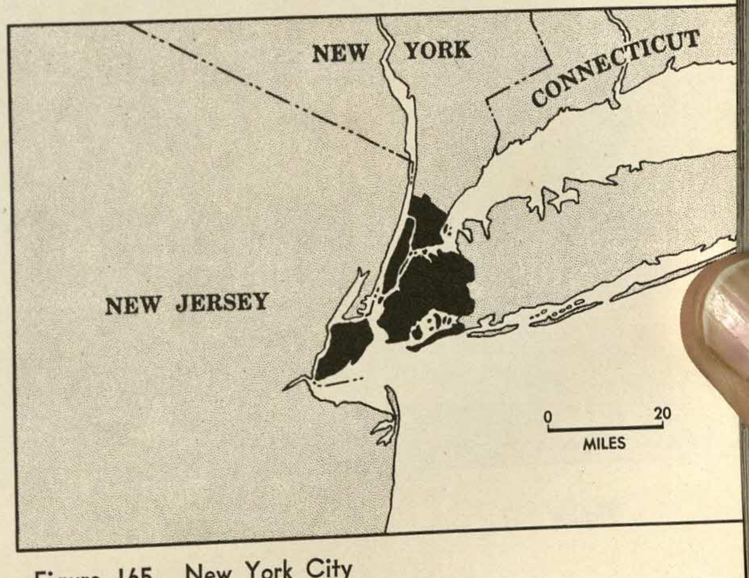
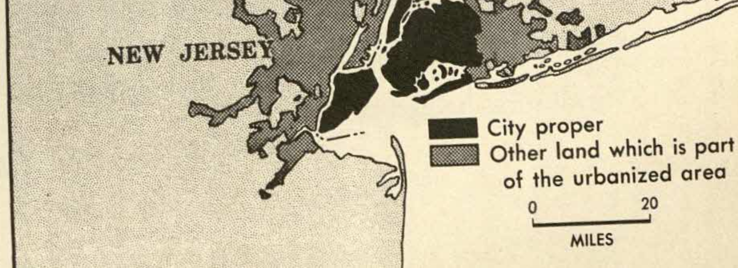


Figure 165. New York City

Figure 166. The New York urbanized area

After map by Bureau of the Census



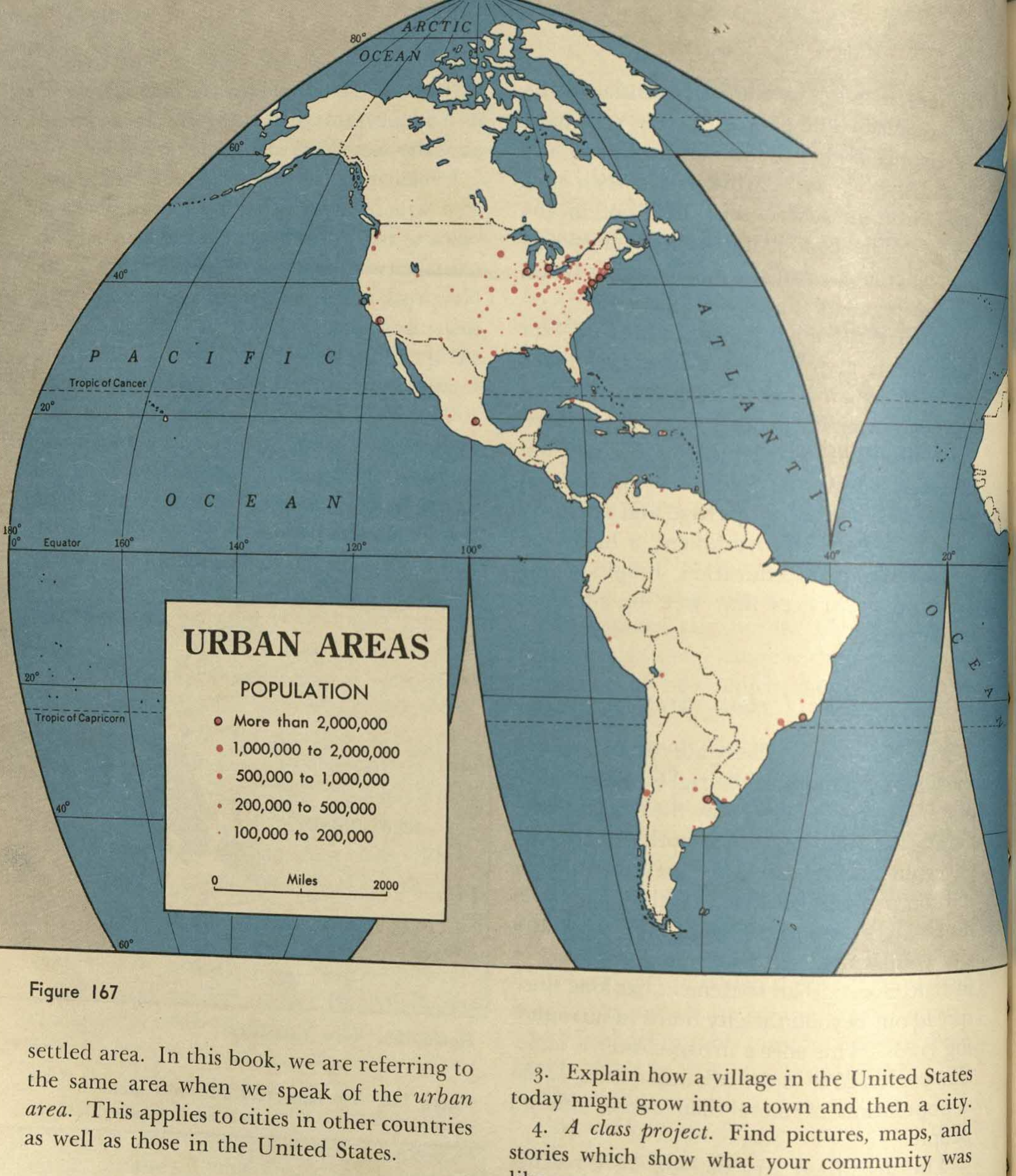


Figure 167

settled area. In this book, we are referring to the same area when we speak of the *urban area*. This applies to cities in other countries as well as those in the United States.

Helps in Learning

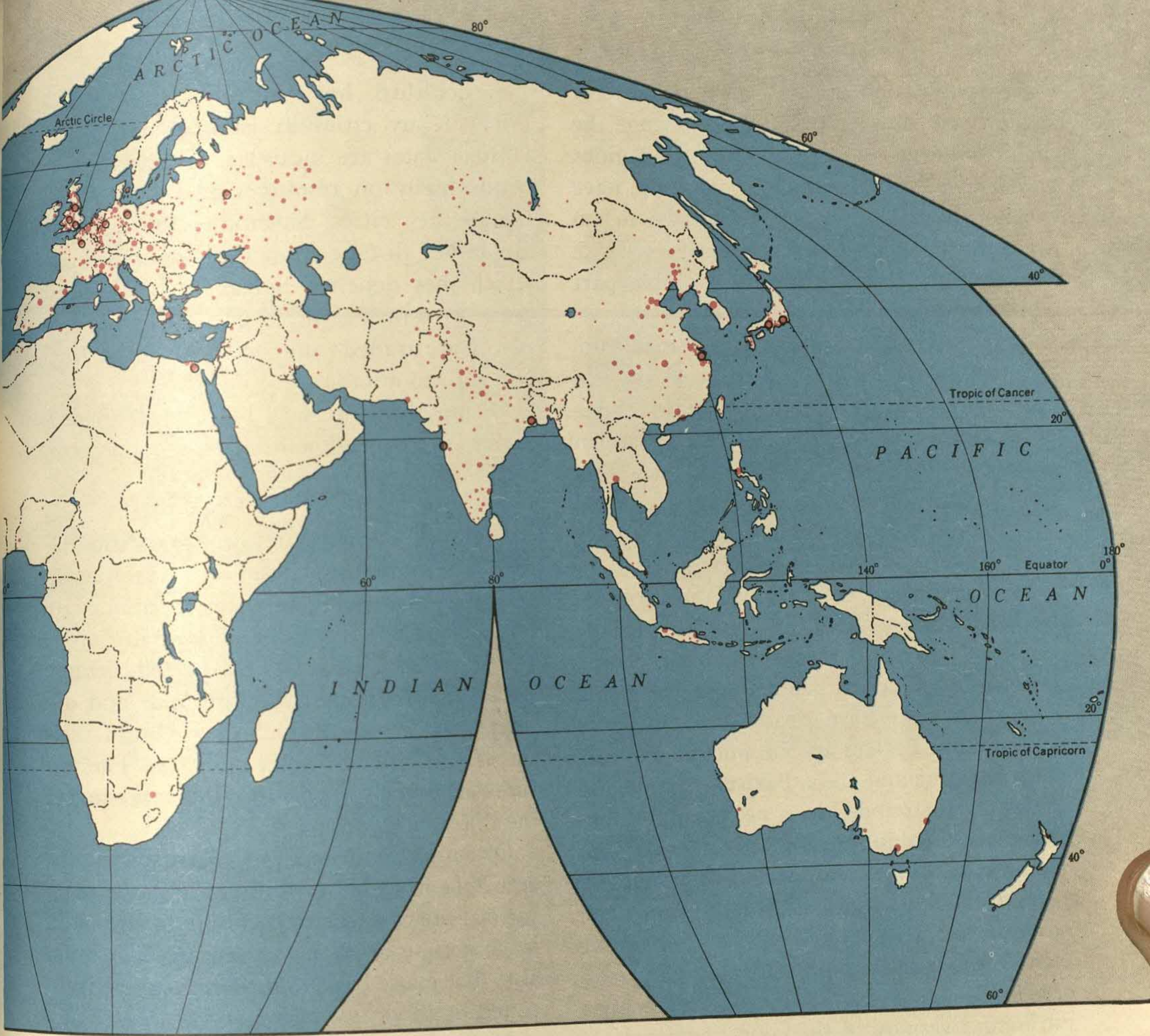
1. If you had a choice, would you prefer to live in a rural area or in an urban area? Make a list of reasons why. List also some disadvantages of living in the area which you chose.

2. Tell in your own words how the Industrial Revolution helped cities grow.

3. Explain how a village in the United States today might grow into a town and then a city.

4. *A class project*. Find pictures, maps, and stories which show what your community was like years ago. Get other materials which show what it is like today. Write a brief description of the differences. These pictures and descriptions might be used for an interesting exhibit in your school.

5. Tell what you think would happen if your community were without any one of the following for a short time: food and water; raw materials; markets; transportation; government; health services.



© C. W. Sorensen

The World's Urban Areas

What one map shows. The map above gives us a picture of the chief urban areas in the world a few years ago. If a similar map had been drawn in 1800, it would have shown less than 25 dots of all sizes. Now, however, there are hundreds of urban areas in the class "100,000 to 200,000" alone. As the map shows, there are more than 20 urban areas which qualify for top honors in size, having a population of "more than 2,000,000." And nearly all the world's cities continue to grow.

On a map of this size it is impossible to show thousands of other urban centers, those with a population of less than 100,000. Yet if they were shown, it would not change the major patterns on the map. For the regions which have most of the larger cities also have most of the smaller ones. The smaller urban areas must not be forgotten, however, since the people in them make up a sizable part of the world's urban population.

It requires only a glance at this map (pp. 160-161) to learn that urban areas are not spread evenly throughout the world. Four great clusters stand out boldly. They are in eastern United States, in Europe (including part of Russia), in India and Pakistan and in China and Japan. By comparison, nearly all the rest of the world looks empty.

It is important to note that the presence of many towns and cities in these four regions does not necessarily mean that urban people outnumber the rural people there. It is true that urban people are greatly in the majority in the United States and in much of Europe. But in China and India-Pakistan, towns and cities are surrounded by a dense rural population, counted in hundreds of millions. The result is a strange combination. The population of the two regions is far more rural than urban. Yet India-Pakistan and China have two of the world's great urban clusters. Australia, by contrast, has few urban centers, yet in them live most of the country's people.

What other maps tell. As you would expect, urban regions are not lands of ranching and herding, for example (pp. 28-29). Neither are they lands where forest work is important (pp. 124-125). But the four great farming regions of the world (pp. 72-73) are also the four outstanding regions of urban settlement.

Towns and cities grow in response to markets for their goods and services. In the thickly settled farming regions the need for these is greater than in most of the thinly settled lands. And towns and cities need food. As you might expect, then, there are more urban areas in the thickly settled farm lands than in the more thinly settled regions.

Agriculture, however, is not the whole story. Many cities in Europe and in the United States are industrial centers that depend chiefly on resources of coal and iron ore. Other cities, Singapore, for example, are rather distant from the resources upon which they depend. Singapore is a kind of ocean crossroads, where goods from remote places are traded, and perhaps moved from one ship to another.

Of one thing we may be sure. If there is a city, there is something that supports it.

How Cities Differ

Everyone knows that towns and cities differ. There are, for instance, certain broad and general differences between urban centers in the United States and those in Europe and in Asia. This is to be expected, because people with different backgrounds and different tastes naturally chose to build their towns and cities in different ways. The pictures on pages 153 and 163 illustrate some of the differences.

Of course, you need not travel to Europe and Asia in order to find contrasts between various towns and cities. Think of two cities in your state or near your home. It is probable that many basic differences may be illustrated by those two cities.

Natural setting. Every town or city differs somewhat from others in its natural setting. One city may have grown at the mouth of a river, while another may have grown in the midst of a plain. One may be at the bend of a river, another in a mountain pass. One city may be in a cold land, another in a hot or rainy land, and so on.

Size. A very striking difference may be in size. How much land does each city cover, and how many people are there in it? Here again it is important to distinguish the city proper from the urban area.

History and people. Each town and city in the world has its own history, including the story of why the original settlement was made

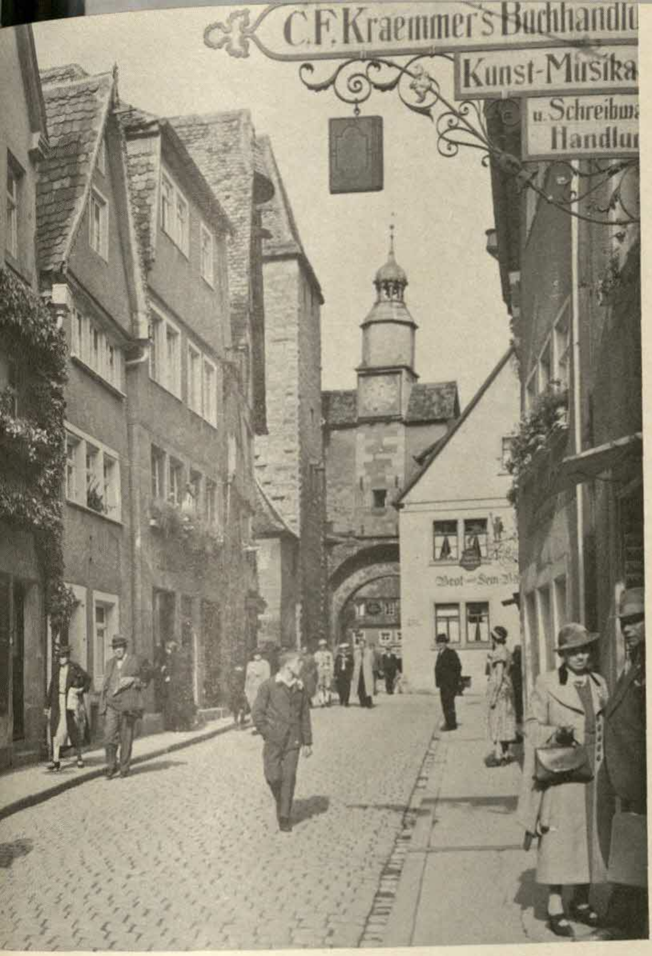


Figure 168. In Europe

© *Gendreau*

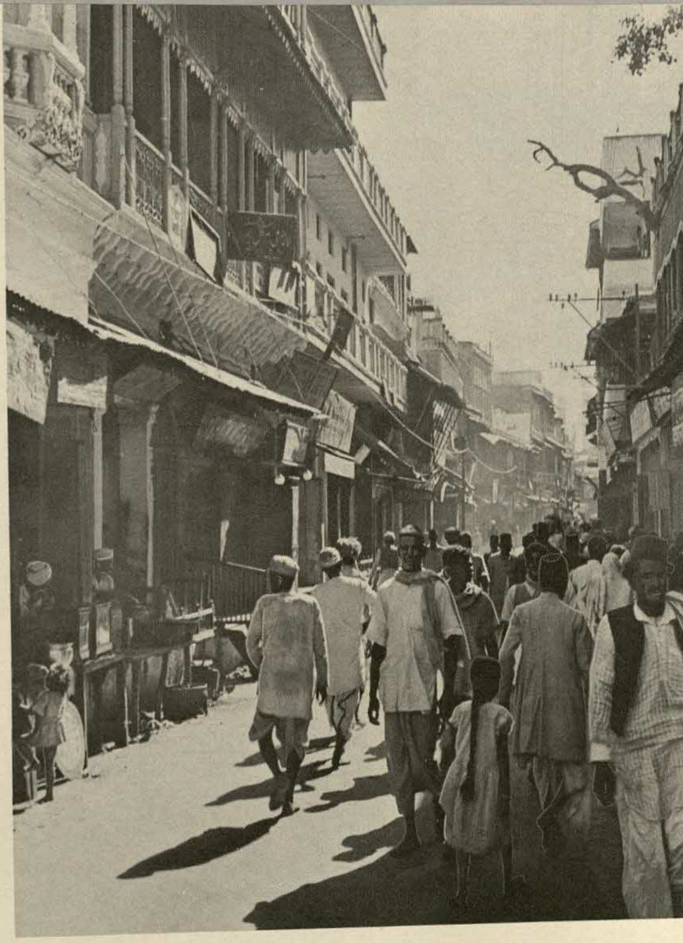


Figure 169. In Asia

© *Black Star*

at that particular place and how the community has grown through the years. Who are the people who now live in the community? Have they come from many different lands or from only a few lands? Perhaps there are few, if any, people from other lands.

Streets and buildings. The streets and buildings in your community are arranged in a particular pattern, in some ways unlike that in any other place. Nearly every large city includes a central business district, a manufacturing district, and various residential districts. But in no two cities are they in exactly the same position with relation to each other. As you may guess, the natural setting and the history of a city may have had much to do with its present pattern.

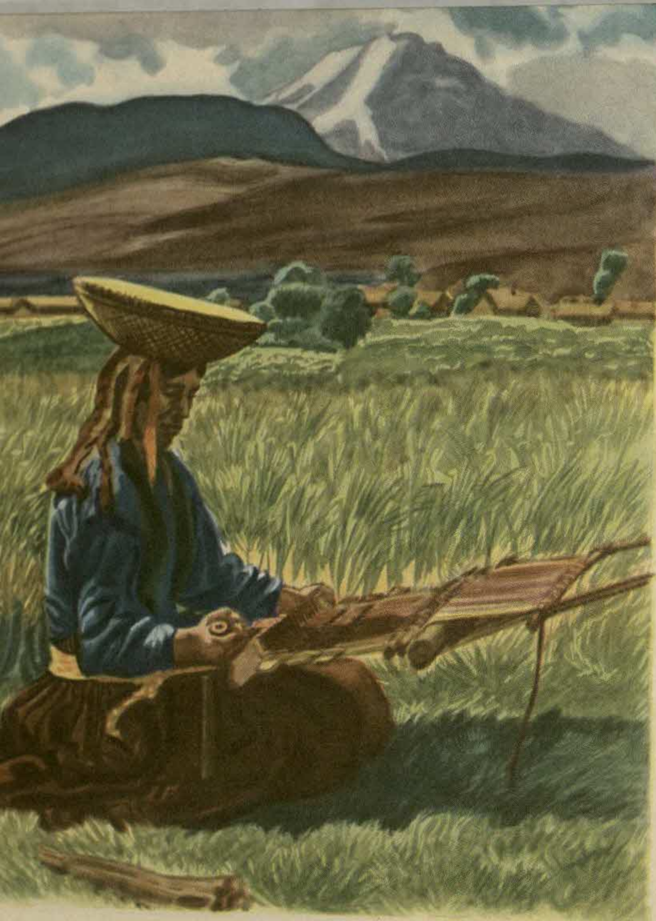
Connections. A town or city differs to some extent from all others in its connections with the region which supports it. Are railroads, highways, canals, or air routes most used?

Work. Finally, what is the chief work of the people in the community? This is one of the chief differences between any one town or city and another. Knowing what people do to make a living will help you understand how urban people depend upon each other and upon rural workers. It will also help you understand that the foundations of an urban community, as well as of a rural community, are its natural resources.

The stories about manufacturing, trade, transportation, and special services that follow will help us greatly in getting an understanding look at the city. For these are ways in which most people in town and city make a living.

Helps in Learning

1. Compare scenes in your community with those of the communities shown in the pictures on pages 153 and 163. What likenesses do you notice? What differences?

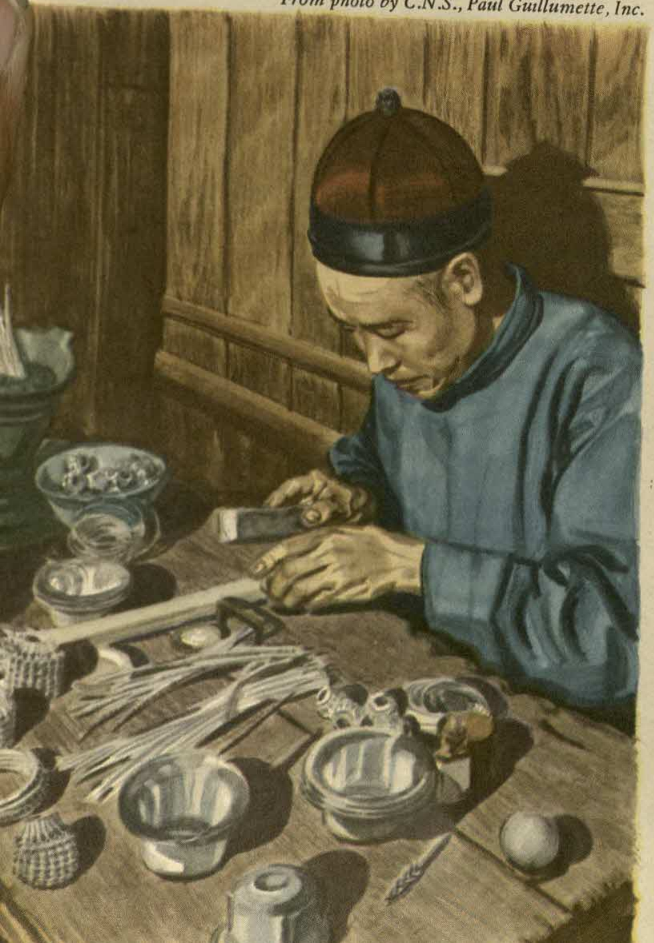


From photo by Pan American Airways

Figure 170. In Peru

Figure 171. In China

From photo by C.N.S., Paul Guillumette, Inc.



2. Choose a city in which you are especially interested and start making a booklet about that city. It may be a city in your own state or it may be one in a far distant land about which you have read.

Try to find a map and pictures of the city and paste them in your booklet. Write a description of it. You may want to make your own drawings of the city, based on pictures you find in newspapers, books, or magazines, such as the *National Geographic*. Plan to complete your booklet by the time you have finished reading this chapter (p. 224).

Manufacturing

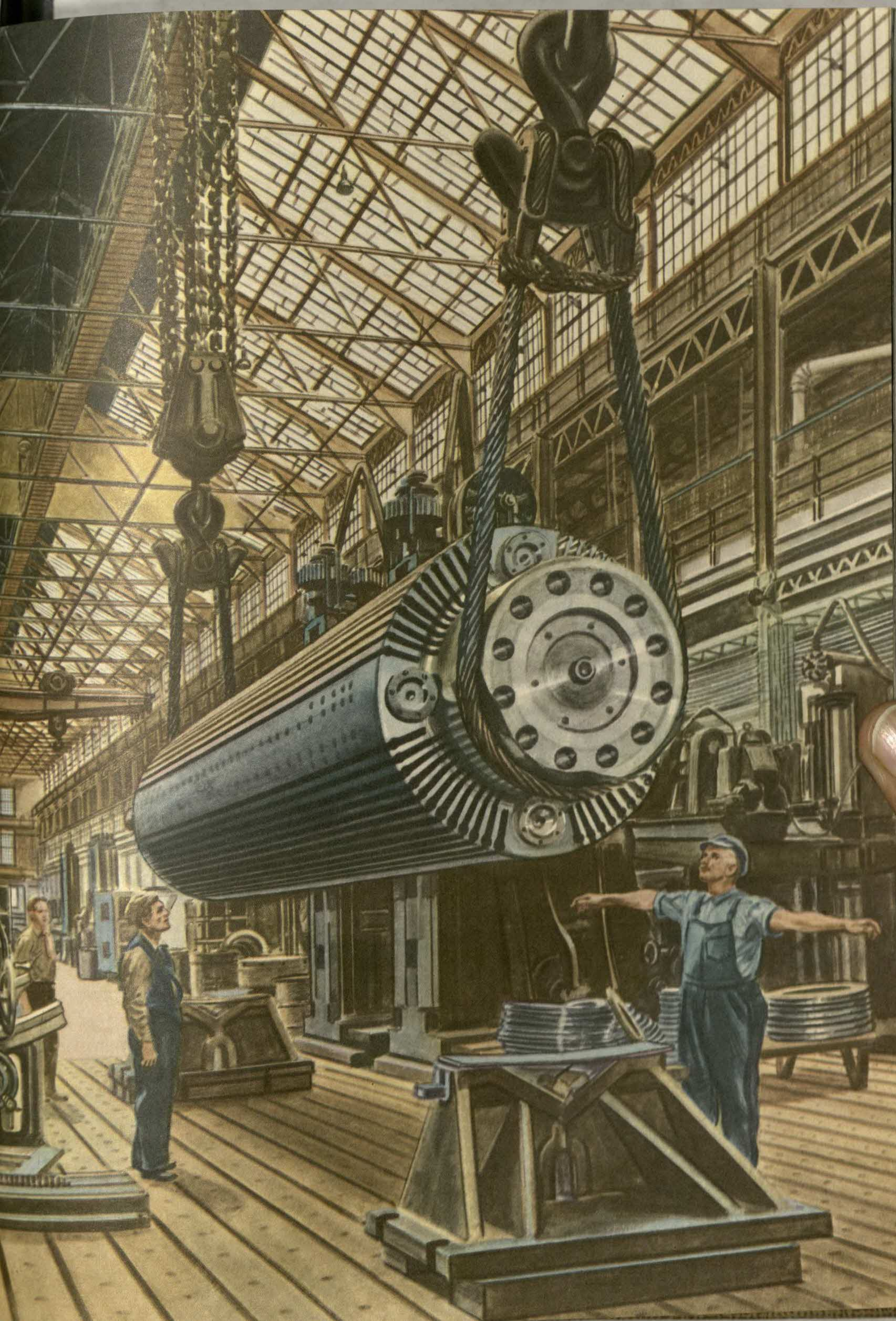
The story of making things. The people shown in the pictures on these two pages are working in places far apart—Peru, China, and the United States. In one picture, rough cloth is being made, in another silverware and jewelry, and in the other machinery. The work varies from the simple to the complex. Yet all these workers have something in common. They are all engaged in *manufacturing*, the work of making things.

The people of the modern world could scarcely get along without manufacturing of one kind or another. Few things are used just as they come from nature. Even in the Stone Age, men knocked chips off rough stones to make crude hammers (p. 24). Women trimmed and dressed the skins of animals to make them serve as clothing. Someone made the plows which the ancient Egyptian farmers used (p. 53). This book was manufactured, as is almost everything else you use in school and at home.

Kinds of Manufacturing

Light or heavy manufacturing. It is obvious that manufacturing may take many different forms. In terms of products, there is the manufacturing of cloth, iron, food, auto-

Figure 172. In the United States →
From photo by Ewing Galloway



mobiles, and so on. Manufacturing is also described as being *light manufacturing* or *heavy manufacturing,* depending upon the weight and size of the materials handled. It may not be easy to draw a sharp line between these two types, since one type gradually blends into the other. But no one can mistake which is light manufacturing, and which is heavy manufacturing, in the pictures on pages 164-165.

Household manufacturing. The three pictures also illustrate three types of manufacturing, described according to the size and kind of place in which each is carried on. The first is known as *household manufacturing,* represented by Figure 170. The woman is weaving cloth from wool that probably came from sheep which were herded by the men of the household. Members of the household will use most of the cloth, although a small part of it may be traded for pottery, perhaps made in a neighboring household.

Many of the people you have read about did some household manufacturing; that is, they made for themselves some of the things they needed. There were, for instance, the Stone Age people (p. 24), the Sakai hunters (p. 31), the Kababish herders (p. 49), and the farmers of Cherán (p. 91).

Now, however, we shall learn more about those who make a living chiefly by manufacturing. That leaves out most household workers. The woman shown in Figure 170 does not make a living by weaving cloth. For her, this is only one of many household tasks.

The workshop type of manufacturing. The Chinese worker in the picture at the bottom of page 164 buys roughly finished silver and other metals. With hand tools he carefully cuts and hammers and shapes the pieces of metal into beautiful little bowls and fine jewelry. Usually three or four other men work with him in his shop. This is an example of the *workshop type of manufacturing.*

Nearly every community in the world has some workshop manufacturing. There is a wood-working shop in Cherán (p. 91), and a tailor shop in Goica Mica (p. 106). In the United States, workshops may include the local bakery, a small print shop, and a woodworking shop. The workshop type of manufacturing is light manufacturing. Mechanical power may be used, but in most cases large amounts of power are not needed.

The factory type. Until the Industrial Revolution, nearly all manufacturing was of the household or workshop type. Then came the modern factory, represented by the picture on page 165. In such a factory, men are employed by the hundreds or thousands rather than by ones or twos or dozens. Enormous amounts of power are needed, in many instances. Although the picture shows heavy manufacturing, the work in many of the largest and most modern factories is light manufacturing. The making of cloth would be one example.

No sharp line can be drawn between a large workshop and a small factory. Yet, in most cases, there is no question about the type to which a particular plant belongs.

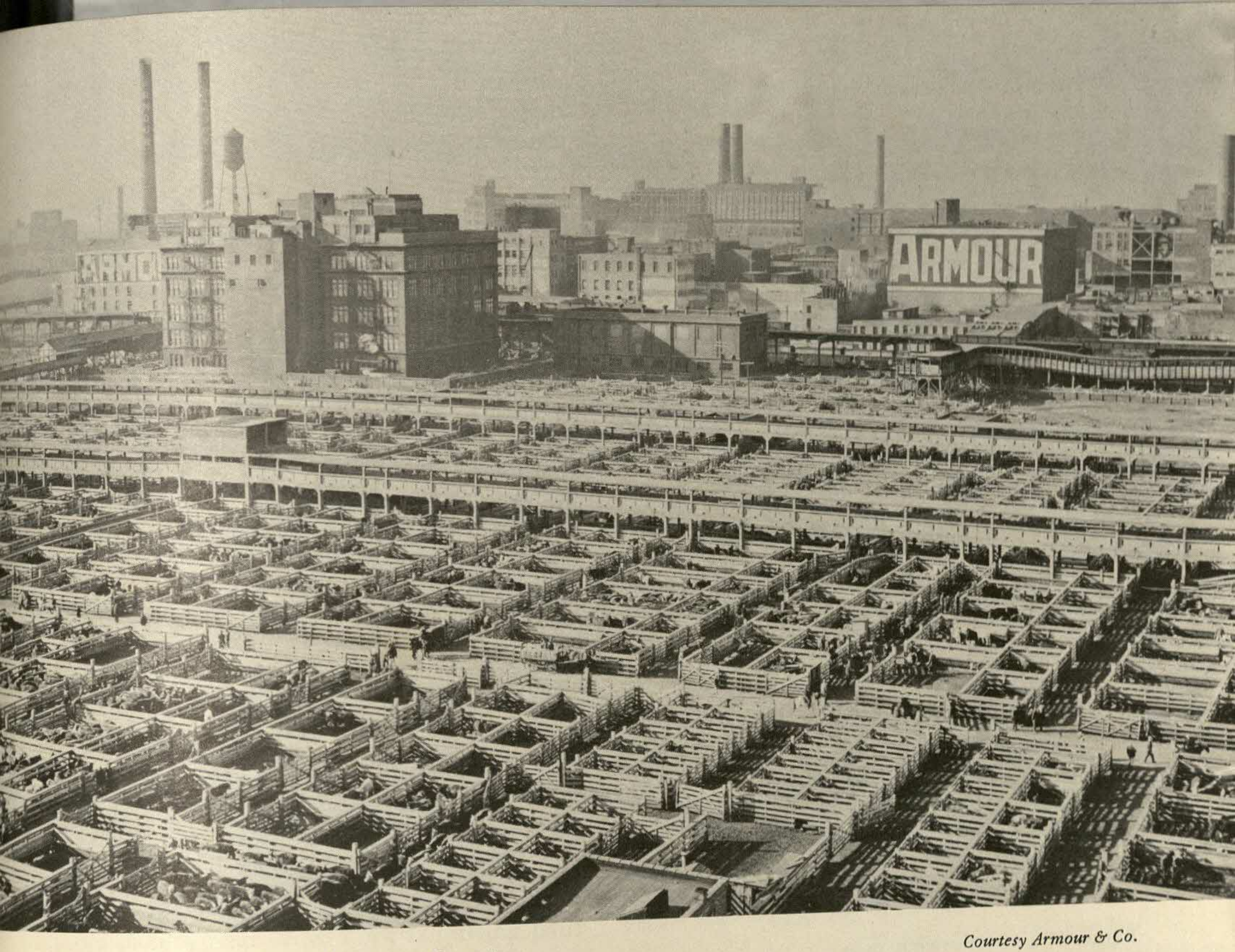
Essentials

Taken together, the three pictures on pages 164-165 illustrate not only kinds of manufacturing but also some of the "musts," or essentials, for all manufacturing. One is *raw material.* Without some wool at hand, the weaver would turn to other tasks. Without a supply of copper and steel, the factory shown on page 165 would have to close.

Labor, too, is essential. Man has invented many machines, but none of them will run forever without being tended. And, with all the machines, much work is done by hand.

Power is another essential in manufacturing. It may be the power of men's muscles or power from coal, falling water, or electricity; but there must be some kind of power to change raw materials into finished products.

A market for what is produced is also es-



Courtesy Armour & Co.

Figure 173. A center for food manufacturing

sential. There must be someone who wants to use the manufactured product. In time, the cloth is worn, the silver bowls are set on a table, the huge roller on page 165 becomes part of a steel mill.

There can scarcely be any manufacturing without the investment of some money, or *capital,* in buildings, raw materials, tools, or wages. Very little capital is needed for household manufacturing. More is usually required for the workshop type of manufacturing. In the case of a factory, like the one on page 165, perhaps millions of dollars were spent before the factory could begin to turn out finished products.

Transportation is another essential. The source of materials, the factory, the workers, and the market are rarely in the same spot.

As you read further about manufacturing, it will be interesting to discover, among other things, how these six essentials have affected the location of industries and of individual factories.

Food to Eat

By almost any measuring stick, manufacturing food is the world's biggest manufacturing business. In every land, every person must eat. Much food manufacturing belongs to the household or workshop types. There are also huge modern food factories, for example, those shown in the picture at the top of the page.

From meat-packing plants. In this picture (Fig. 173), you are looking across part of Chicago's famous stockyards toward the equally famous packing plants. The cattle in the pens were brought here by truck or train from thousands of different farms and ranches.

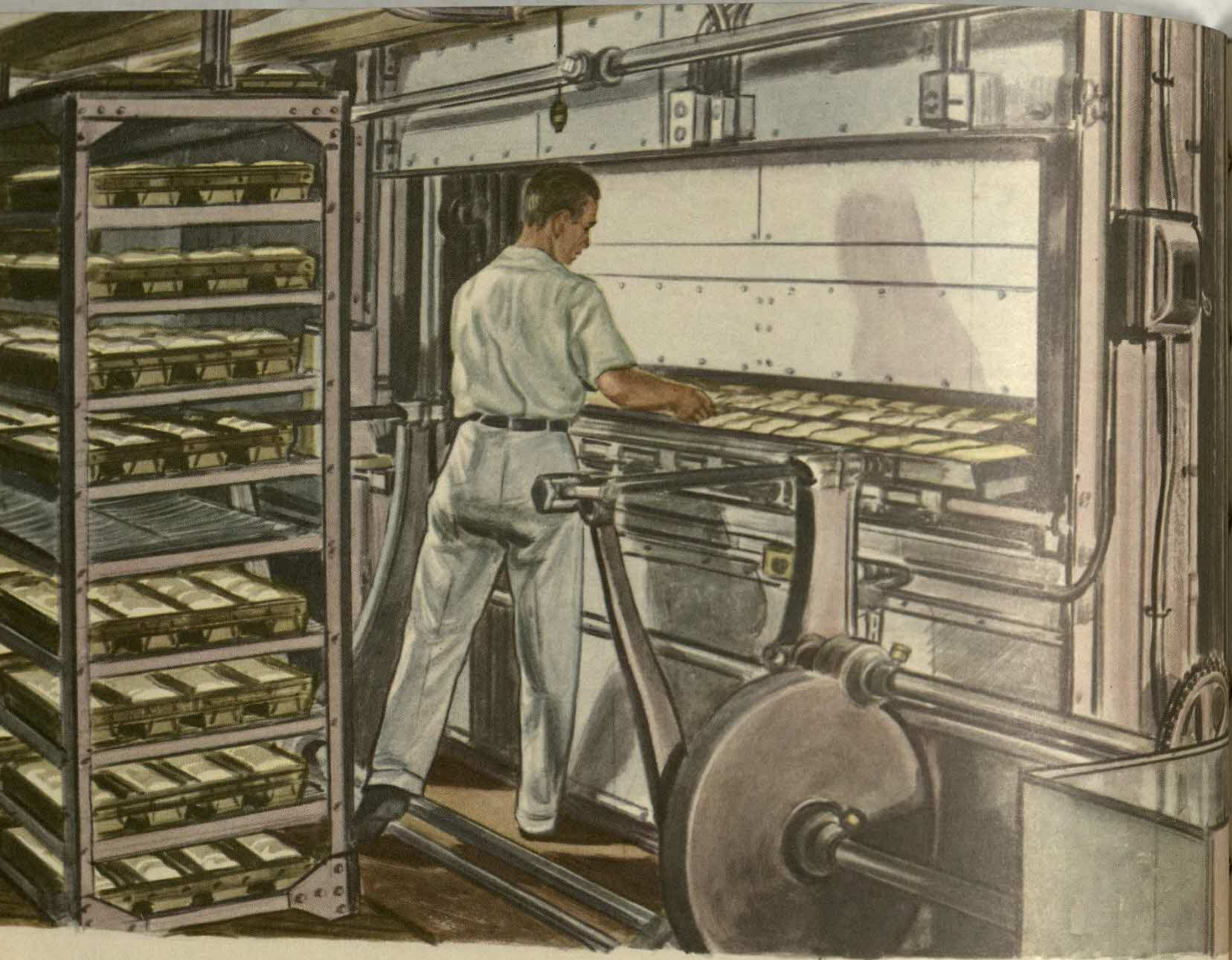


Figure 174. A traveling oven

From photo by Ewing Galloway

Most of the animals are offered for sale by *commission men,* who represent the owners and get a small share of the selling price, or a *commission,* for their services. Usually the animals are sold on the same day they arrive—most of them to meat-packing companies. More than 100,000 animals may pass through the yards in a single day.

The workers in packing houses have extremely varied tasks. Some kill the animals; others take off the hides, inspect the meat, cut the carcasses into pieces of various sizes, or hang the meat in refrigerated rooms.

No part of the animal goes to waste. Dozens of other industries have arisen in Chicago, in which the by-products of the meat-packing industry are used. Animal hair is used in making felt, brushes, or mattresses. Bones can be changed into buttons, knitting needles, or combs. Hides are valuable in manufacturing shoe leather and clothing. Hoofs can be made into gelatine or glue, while grease is used in making soap.

A hundred years ago meat-packing was almost entirely winter work, for modern refrigeration had not yet been perfected. If animals were butchered in summer, the meat would spoil before it could be distributed. Then came refrigeration, the refrigerator car, and other inventions, and packing-house workers had year-round jobs. Now a meat-packing plant may supply a market thousands of miles away in midsummer as well as in midwinter.

The chief five meat-packing centers in the United States are Chicago, St. Louis, Omaha, St. Paul, and Kansas City. Abroad, the outstanding centers are in Argentina, in Australia and New Zealand, and in western Europe. But Chicago is the greatest center of all. It is wonderfully well located between the farmlands and ranchlands, where most of the livestock are raised, and the thickly settled East, where most of the meat is eaten. As the map on pages 230-231 shows, a splendid network of railroads connects Chicago with both of these areas.

Flour mills and bakeries. The milling of flour and the baking of bread are steps that come between the harvesting of grain and the serving of bread on your table. In a simple way, there has been some grinding of grain and baking of bread since ancient times. One of the first and most important industries in early American settlements was flour milling at grist mills that depended on water power. In recent times in the United States, the factory-type flour mill and the commercial bakery have largely replaced the workshop-type grist mill and the home oven. Modern flour milling has made great progress also in other lands, although in these lands most people still bake their own bread.

In the picture on page 168, a worker in a large bakery near New York is putting pans of dough into a machine called a "traveling oven." The pans never stop moving until about 45 minutes later when the baked bread comes out of the other side of the oven. Then the bread is sliced and wrapped automatically, and is speeded on its way to stores and to customers. This oven bakes more than 4000 loaves of bread an hour.

Commercial bakeries, large or small, some almost of the workshop type, are found throughout our country, in all but the smallest communities. One reason for this wide distribution is that people want fresh bread. If possible, they want it the same day it is baked. This bakery, or "bread factory," which is near New York could scarcely supply the people of Kansas.

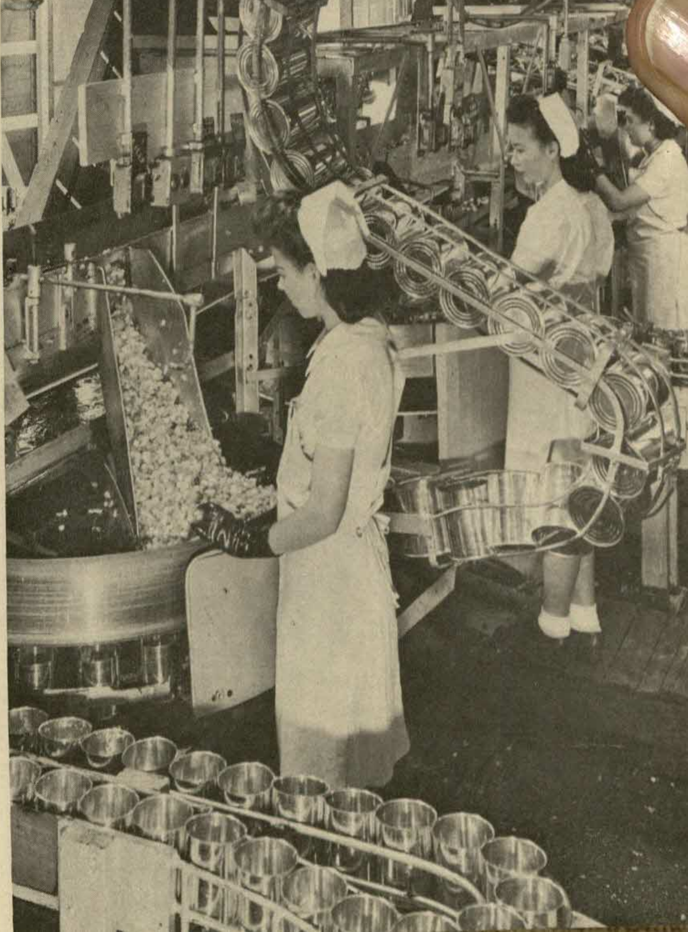
Crackers and some kinds of cookies will stay fresh for weeks, when wrapped properly. It is not surprising, then, to find that most of these products are distributed widely, from a comparatively few plants.

Food in tin cans. The picture below illustrates another familiar kind of food manufacturing—the canning of fruits and vegetables. Both the cans and the fruit move in an endless stream to the machine in the foreground. There the cans are filled. Later, each can of fruit will be inspected, to make sure it is satisfactory. Then the cans will be sealed and a machine will add the labels.

This work owes something to Napoleon, who was emperor of France about 150 years ago. At that time foods could be preserved only by methods such as drying or salting. But Napoleon wanted an improved method of preserving food in order to get better and more varied food for his armies. He offered a prize to anyone who would invent a new way of preserving food.

In 1810, a French candy-maker discovered that, if food was boiled and sealed in jars, it would keep for a long time. He won the

Figure 175. Filling cans with food
Courtesy National Canners Association



prize, and the canning industry was born. There have been many improvements in methods of work since then, but the basic principle of canning food remains unchanged.

Recently, men have learned to preserve many foods by quick-freezing them. But there is no sign yet that frozen foods will altogether take the place of canned foods.

Clothes to Wear

For a long time, nearly all the world's cloth and clothing were made by hand in individual households and workshops. Many people today, particularly in Asia, continue to make their clothing by hand. But in almost every country there are also textile factories in which cloth is made and clothing factories where suits, dresses, and other clothing are turned out. Year by year the use of factory-made clothing increases. Machine-made cloth finds its way even to subsistence communities like those of the Sakai (pp. 31-32).

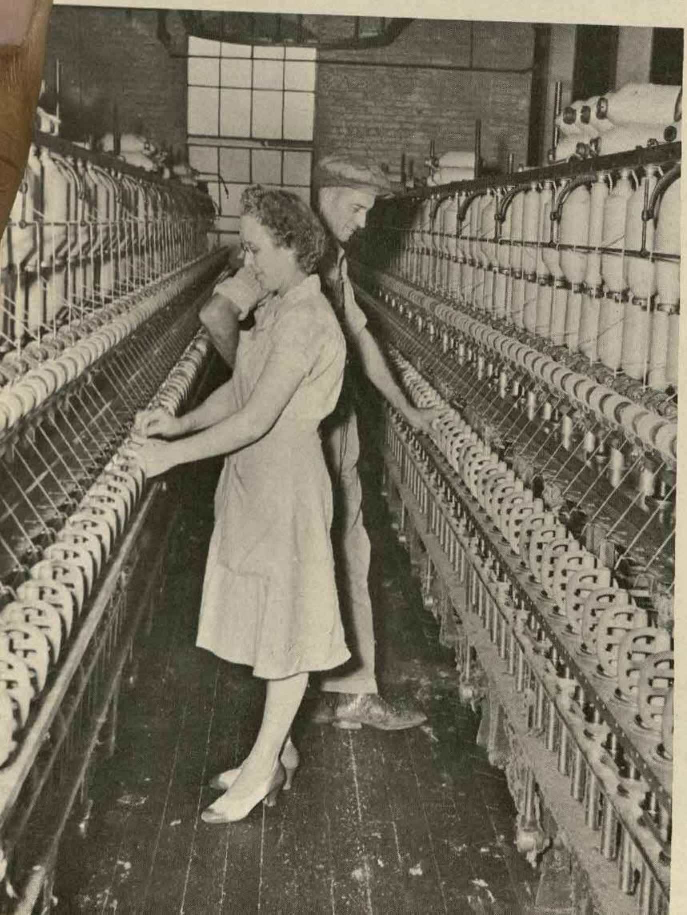


Figure 176. In a textile mill *Lelah Nell Masters*

In the world as a whole, the use of factory-made cloth is far more widespread than the use of factory-made clothing. It is much easier to cut out cloth and sew it to make clothing than it is to spin thread or wool and weave the cloth itself.

The chief raw materials for cloth and clothing have always been the natural fibers of wool, cotton, silk, and flax. To these can now be added the synthetic fibers, such as rayon and nylon. These fibers are called synthetic because they are fibers that do not exist in nature; they are manufactured. Natural materials, of course, are used in making them. Wood and cotton linters are used in making rayon. Cotton linters are the short fibers that are left on the cottonseed after it is separated from the cotton boll in the cotton gin. Coal is used in making nylon.

Making cloth in a textile mill. The Indian woman in the picture on page 164 probably thinks that making cloth is a simple matter. She takes the wool as it comes from the sheep, washes it, twists it into a coarse thread, then weaves the thread into cloth in the way shown in the picture. In the picture in Figure 176, you see part of the interior of a modern textile mill, where the making of cloth has been divided into dozens of separate operations.

The cotton arrives at this mill in the form of bales, each weighing about 500 pounds. As a first step, the cotton is fed into a machine called a bale breaker, which breaks up the lumpy mass into smaller pieces. Other machines remove any leaves, twigs, or dirt that may happen to be in the cotton. Still other machines begin to straighten the tangled fibers. The cotton moves on from machine to machine. It may be combed, drawn, spun, warped, woven, singed, bleached, and dyed, before it becomes a long strip of finished cotton cloth. This cloth may be corduroy, bed sheeting, denim for overalls, dotted swiss for dresses, or any one of dozens of other kinds of cotton material.

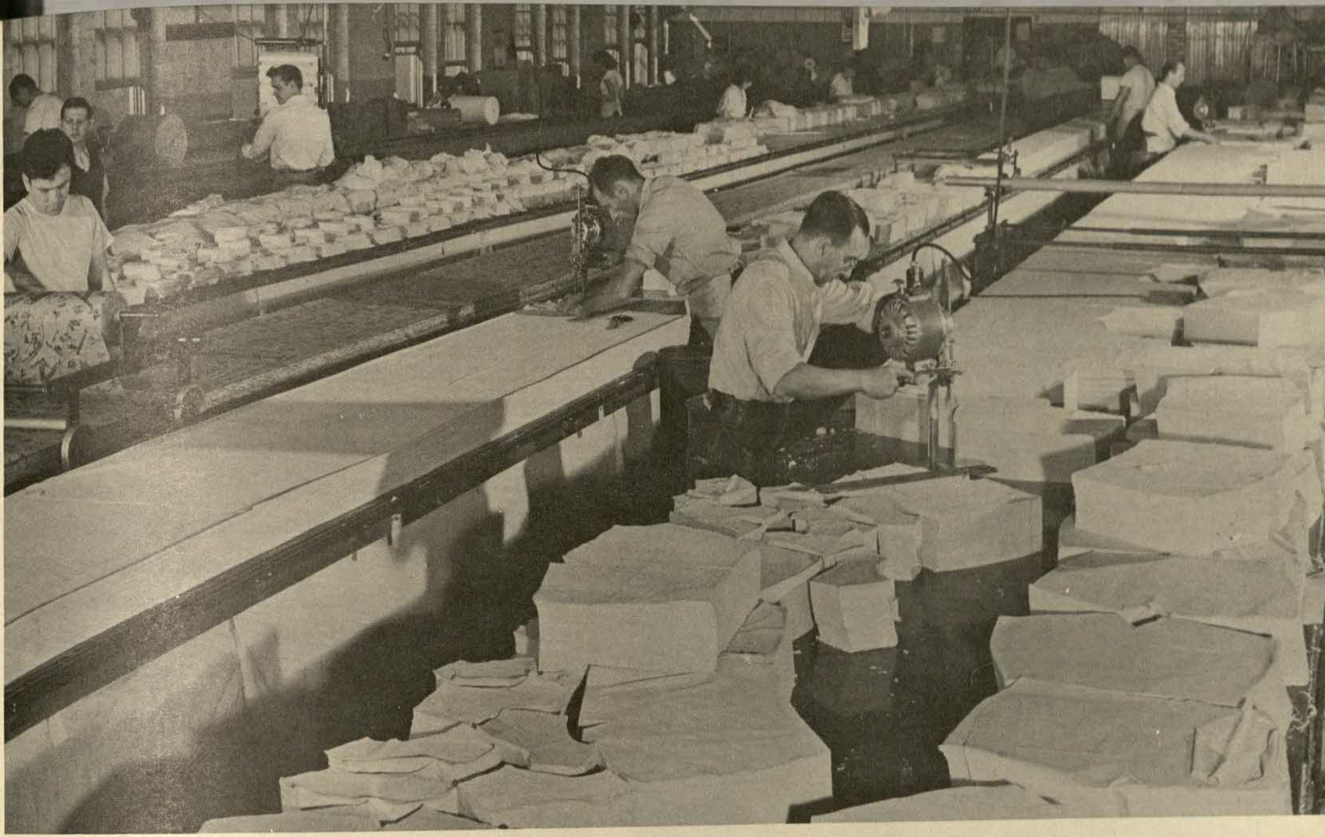


Figure 177. Cutting cloth with a machine

© *Ewing Galloway*

Most workers in textile mills do not spin or weave cloth directly. They tend the almost automatic power machines, through which the materials move. The picture on page 170 shows one of the spinning operations. The woman is mending a broken thread, while the man inspects a long line of "spinning frames" to discover, if possible, the reason why the threads break. These two workers, plus the machines, can turn out thousands of times as much thread or cloth as two skilled workers using only their hands or perhaps a hand loom.

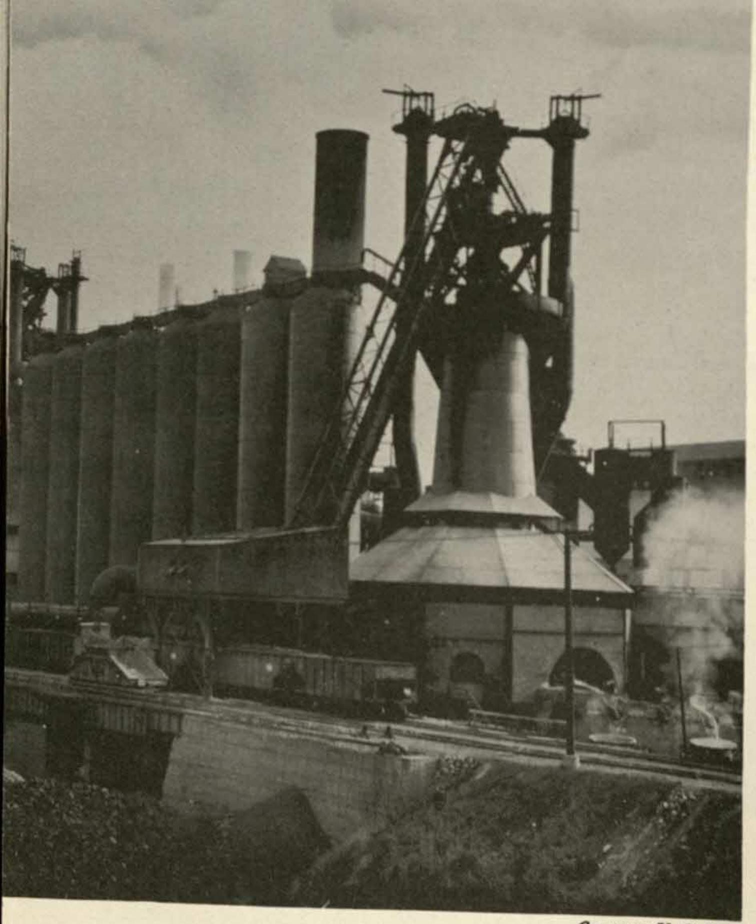
From cloth to clothing. In the United States, some clothing is made in workshops by local tailors and dressmakers. Some also is made at home, of course. The great majority of people, however, wear ready-to-wear, or factory-made, clothing.

Some clothing factories resemble local tailor shops, except in size. Machines are few and simple. The workers use scissors, needles, and sewing machines. They use irons to press the cloth. The picture above was taken in a different kind of factory, where power-driven machinery is used. The man in the foreground is using an electrically driven cutting machine. With this machine he cuts through dozens of layers of cloth at once. For example, in one operation, he can cut out the sleeves for fifty or more suits or dresses, all exactly alike.

For all who make clothing—at home, in workshop, and factory—the sewing machine is probably the greatest labor-saving machine of all. Power-driven sewing machines can take thousands of stitches a minute. Many special sewing machines have been developed for use in factories. One kind makes buttonholes, another sews on buttons, and another does hemstitching. The Industrial Revolution has helped to bring about a revolution in the making of clothing.

Machines to Use

Four major steps. Each working day, many hundreds of tons of reddish-brown ore move from the iron mine shown on page 143. Elsewhere, great masses of copper ore are dug



Courtesy U. S. Steel

Figure 178. Blast furnaces where iron ore becomes iron

Figure 179. Where iron is made into steel

Courtesy U. S. Steel

from copper mines, and bauxite ore is lifted from where it has been lying for no one knows how long. Later, some parts of these ores may be essential elements in a new automobile, a vacuum cleaner, or an airplane. Obviously, much has happened between the mining of the ores and the completion of the finished product.

There are thousands of separate operations in changing these basic ores into useful machines. In the case of iron ore, the metal most widely used, there are four major steps: making iron from iron ore, changing iron into steel, cutting and shaping the steel into the parts wanted, and assembling the parts of the machine. Similar steps are taken in the case of many other metals.

Making iron from iron ore. The picture in Figure 178 illustrates the first great step, changing iron ore to iron. This is done in blast furnaces, like those shown in the picture. Each of these blast furnaces is a huge round steel shell, about 100 feet high and 20 feet in diameter.

When a blast furnace is started, the entire shell is filled with one layer after another of iron ore, coke, and limestone. Then intensely hot air is forced in at the bottom, and the coke begins to burn. Gradually the iron ore and the limestone melt. When melted, the iron itself is separated from waste materials in the ore and settles to the bottom of the furnace. The waste materials combine with the melted limestone to form slag, that floats on the top of the liquid iron. Every four or five hours, the furnace is tapped, that is, the white-hot liquid iron is permitted to flow out through a hole near the bottom of the furnace. The slag is drawn off separately.

As the materials melt and settle down in the furnace, more iron ore, coke, and limestone are added at the top. This process goes on continuously, day and night, as long as the furnace is in operation.

Coke, the fuel that makes possible the smelting of iron ore, might well be called "roasted coal," for it is made by heating coal in closed ovens. And the wide use of coke in smelting iron ore provides a huge market for coal.

Changing iron into steel. The iron from the blast furnace is called *pig iron*. This is too brittle to be very useful. But there are several ways by which it can be changed, or *converted*, into steel, which has almost countless uses. In making steel the amount of carbon left in the metal has much to do with its quality. Certain mixing metals, or alloys, (p. 148) may also be added to give special qualities, such as hardness, to steel.

In the United States, nearly all steel is made in open-hearth furnaces. The picture in Figure 179 shows melted pig iron being poured from a huge bucket into a great funnel which leads to an open-hearth furnace. The furnace itself does not show in the photograph.

The pig iron is "cooked" in the open-hearth furnace for eight or ten hours. Frequent tests are made and various materials are added as needed to make the particular kind of steel wanted. Finally, the man who watches the furnace announces that it is ready to be tapped. Soon a fiery, golden stream of liquid steel flows out into waiting molds—perhaps 300 tons of raw steel from one open-hearth furnace.

In recent years electric furnaces have come into use. Steel may also be made by the Bessemer process. So-called Bessemer steel is made by blowing air through liquid iron in a Bessemer converter, which looks like a huge barrel holding 10 or 15 tons of steel. In many cities where steel is made, the flames from Bessemer converters light up the sky at night.

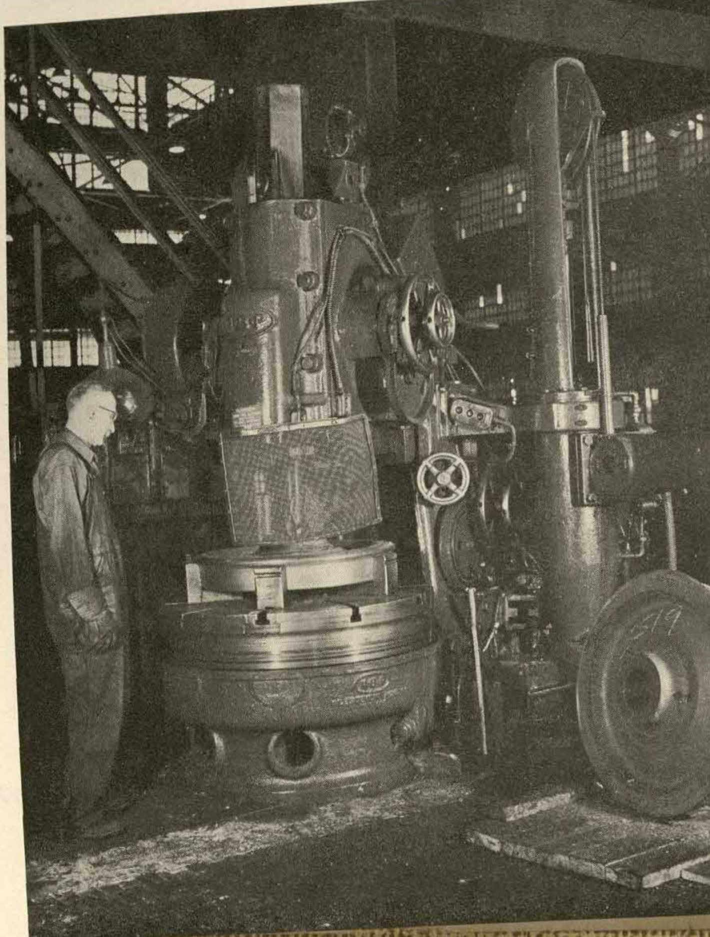
Shaping the steel. The steel which leaves the open-hearth furnace as a bright, fiery stream soon hardens into a black, rough block. Steel must then be shaped into some more useful form. Some steel is shaped by hammering it, as shown on page 26. Steel may be melted and poured into specially designed molds. The rough blocks may also be shaped between rollers, under great pressure, into rails or sheets or bars.

This rough shaping, as it is called, is not nearly good enough for many of the parts that go into modern machines—into automobiles, for example. There the measurement of certain pieces must not vary more than one-thousandth of an inch. This precise shaping is accomplished by *machine tools*. These are power-driven machines which cut away extra metal and leave gears, wheels, or cylinder rings of the exact size needed. Without machine tools, there could be no modern industry as we know it, for machine tools are the machines that make machines.

The picture below shows a machine tool which shapes wheels for railroad cars. As the wheel spins on the machine, it is trimmed to exactly the right size and shape.

Assembling the parts. The picture on page 174 shows how an automobile is put together

Figure 180. How wheels are made *Courtesy U. S. Steel*



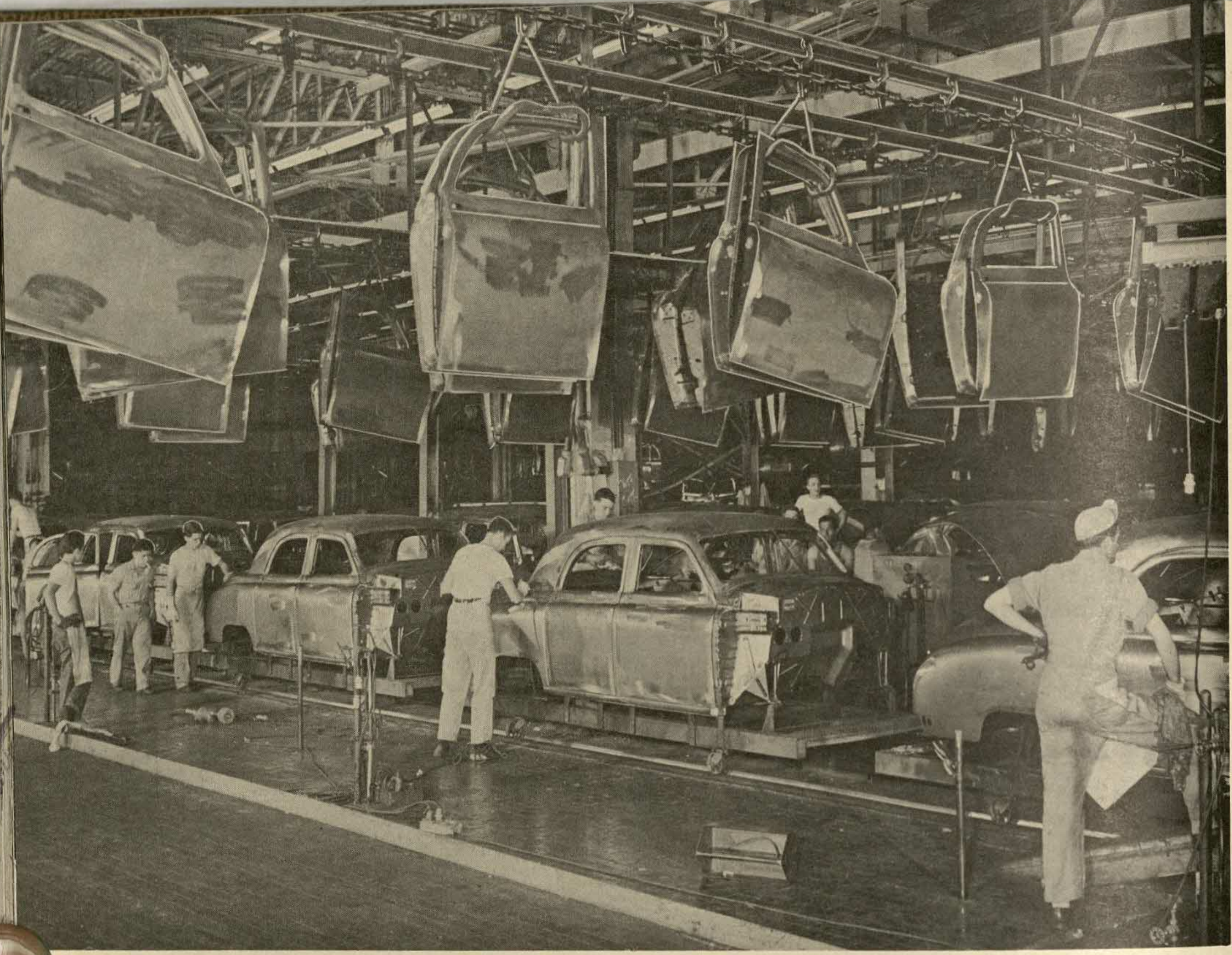


Figure 181. An assembly line

© *Ewing Galloway*

in one of Detroit's great factories. Each worker attaches some part to the automobile as it moves by on the almost continuously moving assembly line. If you walked along this line, you could watch while a mere skeleton of steel grew into a shiny new automobile, which is driven away under its own power from the end of the assembly line.

No other machine is made exactly like an automobile. But the work of "assembling the parts" is common to factories where machines are manufactured in large numbers—airplanes, trains, radios, watches, refrigerators, fountain pens, typewriters, and so on.

Mass production. An assembly line, of course, is possible only where many machines of the same kind are made. This is *mass production.* Mass production, in turn, depends on the precision work of machine tools. It depends, too, on producing large numbers of machines or other things which are exactly alike. It also depends on the fitting of any one part into its proper place on any machine; that is, the parts must be interchangeable. Otherwise, each part must be fitted to every other part by hand, and that is not mass production.

Mass production, once begun, has helped itself to grow. Most things are lower in cost if made in this way. The low cost, in turn, has helped to provide the large market which makes mass production possible.

Other Useful Things

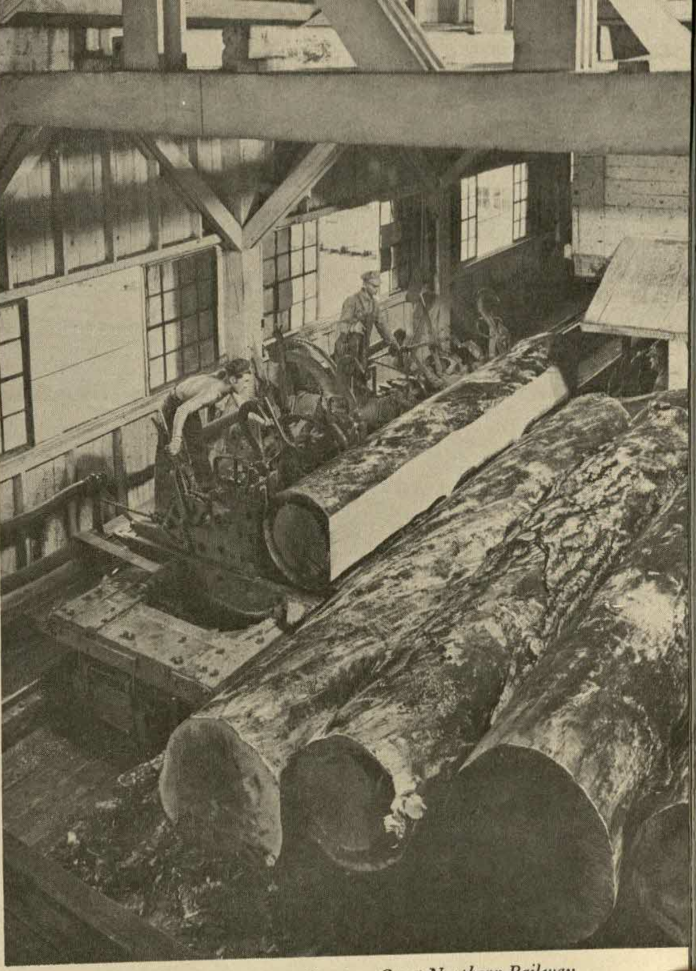
Wood products. The logs cut by forest workers are raw materials for another kind of manufacturing—making wood products.

Small amounts of wood are used in the making of some machinery. Much wood pulp is used in the manufacture of paper and of rayon. Most of the rest of the wood is used for building material or furniture. The full list of wood products is almost endless—clothes-pins, axe handles, baseball bats, pencils, and many other things.

The picture at the top of this page shows the first step in the manufacture of wood products—sawing the logs. This sawmill, or lumber factory as it might be called, is in Montana. Already one of the power-driven saws has sliced one side off the log. The product of this factory is lumber, of course. This lumber, in turn, may become the raw material for a furniture factory. In many other industries it is equally true that the product of one factory is the raw material for another.

Other manufactured products. In the world as a whole, factory workers make many thousands of different manufactured products. The great majority of these products are included in "food to eat," "clothes to wear," "machines to use," and "wood products." Others of importance are leather goods such as shoes, clay products such as bricks and pottery, chemicals for use in almost every industry, and petroleum products. Figure 183 shows a large petroleum refinery near San Francisco, California. Petroleum is brought here from the oil wells, and by a complicated process is transformed into useful things, including gasoline and other petroleum products.

The house or apartment in which you live is made in large part of manufactured products. The building materials may include wood, stone, concrete, or brick together with wire, pipe, nails, plaster, and so on. The furniture and household equipment are also manufactured. We could not live as we do except for the hundreds of manufactured products that we usually take for granted.

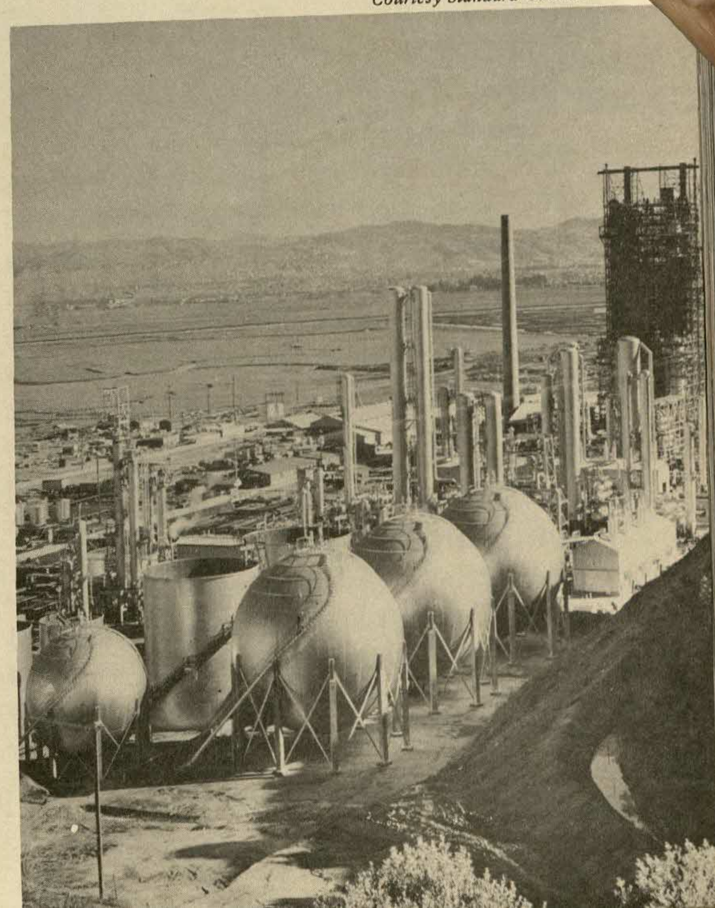


Courtesy Great Northern Railway

Figure 182. Manufacturing lumber

Figure 183. Where petroleum is refined

Courtesy Standard Oil Co.



Helps in Learning

1. Name several things that you use that are not manufactured. Name several things that are manufactured.

2. Why do you think it would be difficult to get along without manufactured products?

3. Choose some manufacturing establishment in your own, or in a neighboring, community. Is it a workshop type or a factory type? What raw materials are used? Where does the power come from? What are the products? What kind of transportation is used for the raw materials and for the products?

4. The product of one factory may be used as raw material by another factory. Explain what this means.

5. Name at least one manufactured product that might be used by people engaged in the following kinds of work: hunting, trapping, and fishing; ranching and herding; farming; forest work; and mining. Use the pictures in the chapters about these workers to illustrate.

6. Why would you expect to find very few meat-packing plants in regions of subsistence herding, or in regions of subsistence farming?

7. How did the Industrial Revolution change the work of meat-packing?

8. Why do you think grist mills were important to early settlers in the United States?

9. Explain why people can enjoy a greater variety of food, now that food can be preserved by canning or freezing.

10. Bookshelves might be made at home or in a school wood-working shop. They might be made, also, in a furniture factory. One type of production is mass production. The others are not. Explain the differences. If bookshelves were made in a factory, would the parts, or sections, probably be interchangeable? Tell why.

11. Why are interchangeable parts essential to mass production? Give an example.

12. Make a list of the titles of the pictures on pages 164-175. After each title write what raw materials might be used in the work. Write also, after each title, what the products might be.

13. Try to find pictures in magazines or books that show the making of iron and steel or of machinery. Tell, if you can, which of the "four major steps" (pp. 171-174) is shown in each picture.

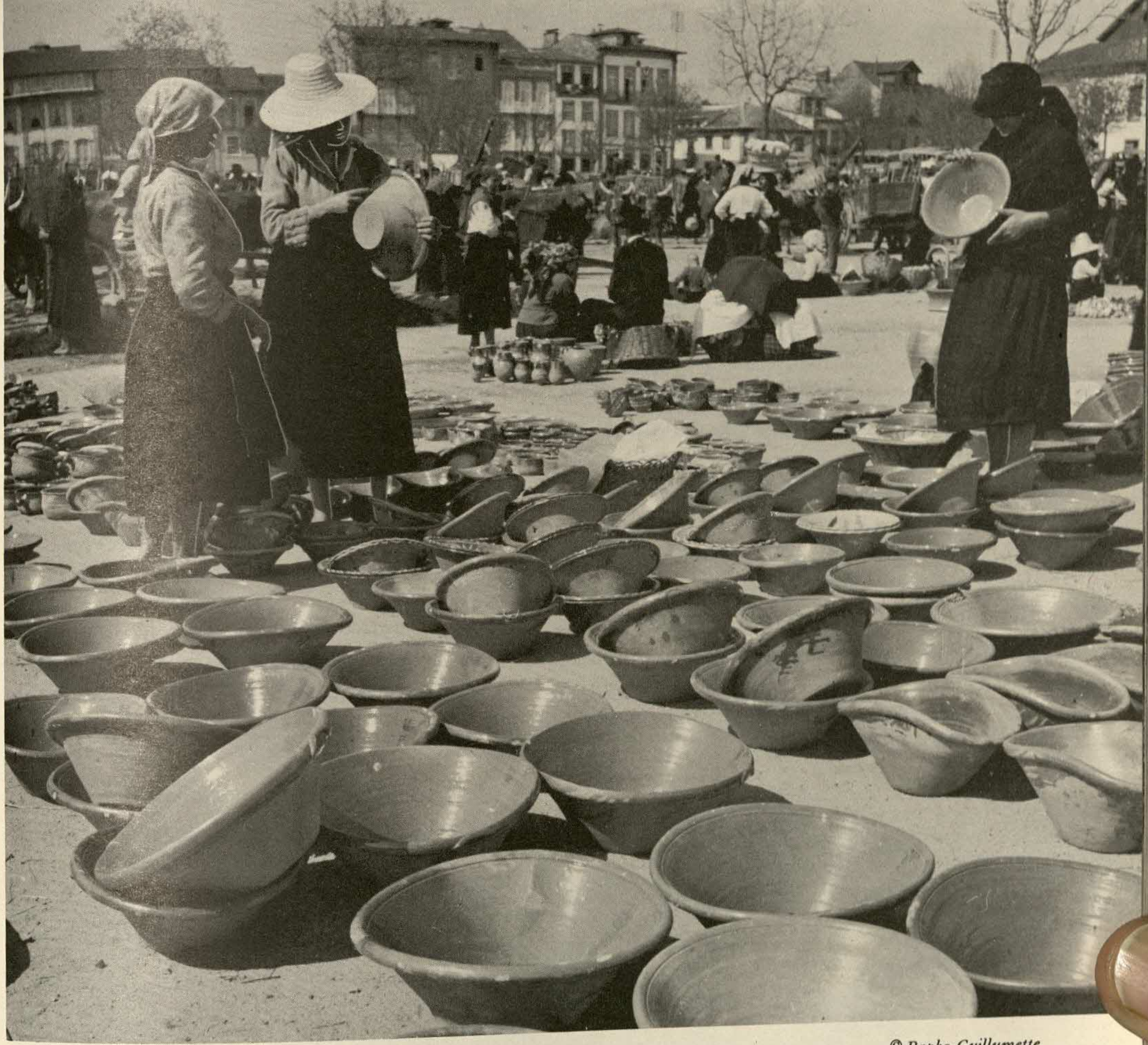
A Living from Trade

The market place. Even in very early times there must have been some trade. Perhaps some man, woman, boy, or girl admired something another person owned—a knife, a leather cloak, or a stone of unusual color. And the owner of the desired object was willing to accept something else in exchange for it. This exchange of goods was a very simple form of *trade.*

By the time that small settlements had grown into towns and cities, trade, of course, had greatly increased. As you have seen, these urban settlements could not have existed without trade. In fact, trade was in part responsible for their growth. Within towns and cities, people formed the habit of meeting for trade in a particular location, in many cases in the center of the settlement, convenient for all. A central location of this kind became known as the *market place.*

In the world today, every town and city has a market place in one form or another. The picture on page 177 shows an open-air market place in a town in Portugal. To this square in the center of the town, farmers come with their surplus grain or vegetables to sell. Here they find pottery, tools, and other things, perhaps made in the workshops of the town. The women in the foreground are carefully examining some wide basins which have been placed on display. To the market place, also, come the people of the town, some of whom work in the workshops.

Probably by the end of the day the farmers



© *Rapho-Guillumette*

Figure 184. A market place in Portugal

will have sold their products and will have bought the tools, pottery, and other things that they need. The townspeople will have sold the goods that they made and will have bought the food that they need. The owner of one workshop may buy something made in another workshop. A farmer who sells his surplus grain may buy potatoes from another farmer. In any case, the chief activity of the day, in the market place, has been trade.

In many towns and cities the open-air market place has largely disappeared. The trading has "gone indoors." In a very real sense, the "main street" of every American town is its market place. In large cities, the central business district, the "downtown" area, is the chief market place. Dozens of other centers of trade may be located in other parts of the city. Different market places may specialize in different kinds of goods. But a market place will be found in every urban center in the world.

Trade with, or without, money. In market places of long ago, there was often a direct exchange of one useful thing for another. A knife, for example, may have been exchanged for a piece of pottery. This kind of trade is *barter*. Almost everyone has done some kind of bartering, either in trading marbles, pieces of candy, neckties, or books. A farmer barters when he trades horses with a neighbor, or trades some wheat for corn. The great bulk of the world's trade, however, involves the use of money. It is *not* barter.

Why trade? Anyone can understand the advantages of trade, whether it is barter or trade with money. If there were no trade, each person would have to get along with the few things that he could make by himself.

If all trade stopped suddenly now, the extra food produced by farmers would rot. The livestock on ranches would in time die. Workshops and factories would close their doors, for their supply of raw materials would run out and there would be no market for their products. Cities and towns would be abandoned, because food and other needed supplies would no longer be found in the markets. Trains, ships, airplanes, and automobiles would stop for lack of fuel. Fortunately, these things will not happen. But trying to imagine what the results would be if they did happen emphasizes the great part that trade plays in our everyday life.

Kinds of Trade

There may be trade in places where no one makes a living chiefly from trade. Consider, for example, the market place in Portugal, shown on page 177. The man who made the pottery may have brought it to this place, himself, to sell directly to farmers who will use it. In this case there is simple direct trade between the original producer and the final consumer. Although they carry on

Figure 185. A trapper sells his furs

Courtesy National Film Board of Canada

trade, neither the man who made the pottery nor the farmer makes a living chiefly by trade.

However, a merchant may buy the pottery at a workshop and offer it for sale in the market place. In this case there is someone, the merchant, who makes a living by trade. He neither produces nor consumes the products which he handles. He buys at one price and sells at another. The difference between the purchase price and the selling price is his pay for collecting the goods, investing his money, taking the risk of loss or damage, and taking time to wait on customers. He may also provide a place where customers may readily find what they wish to buy.

Most of the world's trade is not simple trade, where the original producer sells directly to the consumer. Instead, the products of farms and ranches and mines and forests may be bought and sold many times before they are finally used up, or consumed. This makes room for many traders and many different kinds of trade.

Buying and selling raw materials is one kind of trade. Other kinds of trade include trade in partly finished goods, wholesale trade, and retail trade.

Buying and selling raw materials. The picture on page 178 was taken in a trading post near Hudson Bay, in Canada. An Indian trapper has brought in a fine catch of furs. Now the manager of the post is inspecting the furs carefully, in order to decide what he should pay for them. Meanwhile, the trapper waits, confident that it will be a fair price. The ribbons on his jacket tell us, by the way, that he is a veteran of World War II.

In this case, of course, the raw materials are furs. The man who makes a living from trade is the buyer. And the building is appropriately called a trading post.

The local buyer of raw materials is a familiar person in most towns and villages in the world. In a fishing village, he is a buyer of fish. In the ranch lands, he is the buyer of livestock or perhaps the buyer of wool. In farming regions, it may be the "elevator man" who buys grain, the owner of the "cream station" who buys the farmer's milk and cream, a dealer in poultry and eggs, or a buyer of fruits and vegetables.

Some buyers of raw materials are representatives of large corporations whose central offices are hundreds of miles away. Others are in business for themselves. Both groups of men make a living from trade. They buy raw materials and then sell them. In either case, these buyers are the connecting link between the people who work directly with natural resources and the people to whom, in turn, these goods are sold.

Trade in partly finished goods. After raw materials have been marketed, they may take various routes to the final consumer. It depends in part on what products are made from the raw materials and who happens to buy them. There are companies that buy raw materials, control all the manufacturing processes, and sell the food products to retail stores or directly to customers. For example, a dairy company may buy milk from farmers, pasteurize it or treat it in other ways, and sell pasteurized milk, butter, buttermilk, or cheese to retail stores or directly to customers. But this is not the case generally. In most instances, materials are bought and sold a number of times and may go through several stages of manufacture or processing before they reach the final consumer.

One important form of trade, therefore, is the *buying and selling of partly finished goods,* that is, products which have gone through one or more manufacturing processes but are not yet ready for the consumer. One example is the raw steel that comes from an open-hearth furnace. Other examples are hides, tanned but not yet made into shoes, and cotton yarn. Many factories specialize in just one of the many steps in manufacturing; they buy partly finished goods, add their work, and then sell the goods to other factories, which will carry on the work. As a

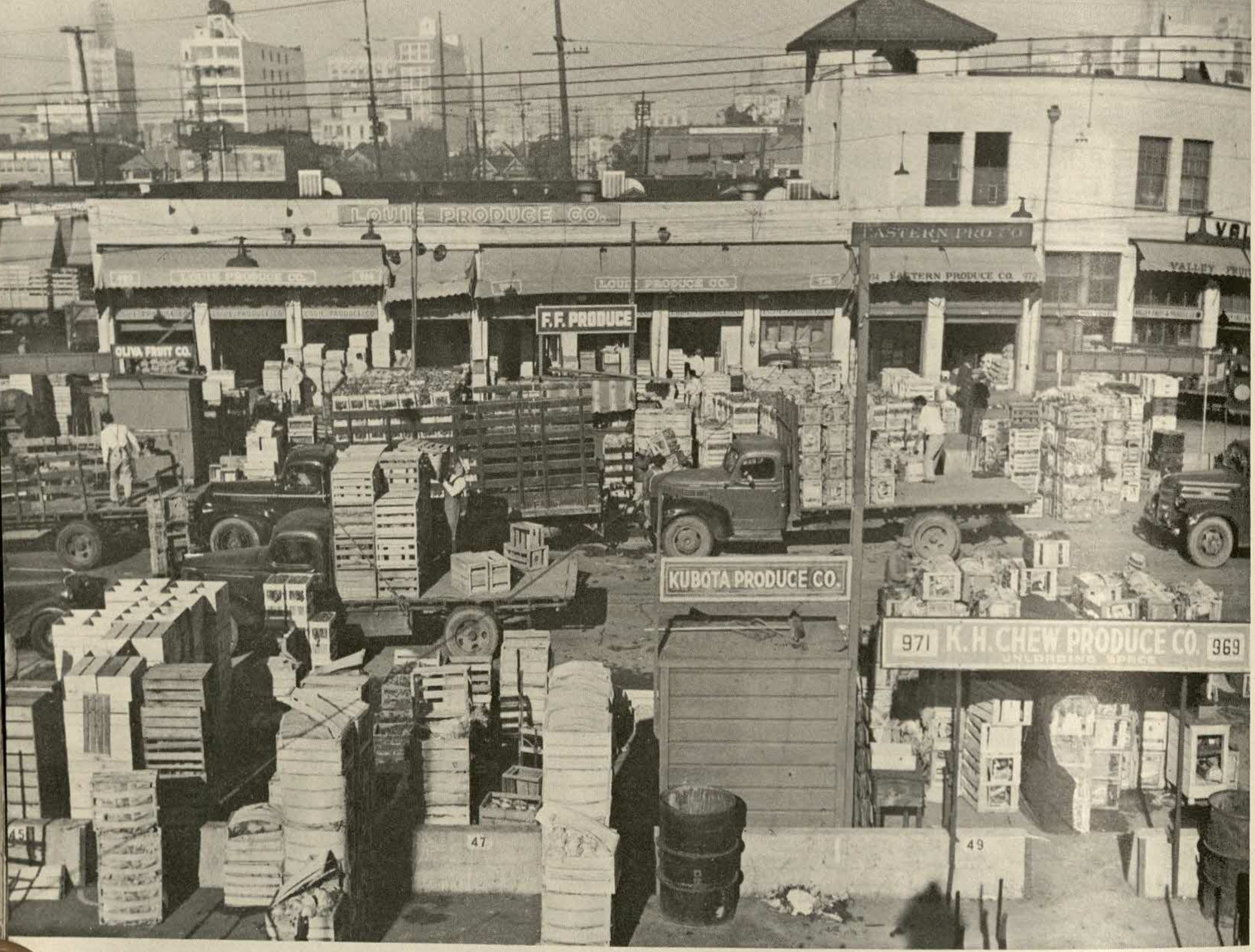


Figure 186. A market place in Los Angeles

© *A.P.S., from Black Star*

result, there is much trade between factory and factory within a city and between factories in different industrial cities or industrial nations.

Most of us are scarcely aware of this trade. The goods usually move in large quantities in freight cars, trucks, or ships. Yet it is an essential part of the full story of trade.

Wholesale trade. By one route or another, most of the things we buy finally arrive at "wholesale houses." These are business establishments which buy goods from the producers or manufacturers in large quantities, and sell them chiefly to retail stores. Ordinarily wholesale houses do no manufacturing.

The picture above was taken in a wholesale fruit and vegetable market in Los Angeles. Each wholesale company rents a stall, or large compartment, in one of the long buildings. To one of these stalls may come fruits and vegetables from all over California and from other states as well. To the same stall come retail grocers and owners of retail fruit and vegetable markets. The retailers discuss the price of the goods with the wholesalers and finally select the products that they think their customers will buy. Some of the trucks in the picture belong to these retailers. Others were used to bring the fruits and vegetables to this great market place.

Another place of wholesale trade is shown in Figure 187. This is a wholesale grocery, in Bedford, Pennsylvania, the community described in the first chapter. Salesmen go out from this establishment, calling on grocers throughout the surrounding territory. Most of the goods they sell will be shipped by truck, as is suggested by the picture. Goods come to the wholesale house both by truck and by rail. It is an advantage, then, for a city to be located near a good highway and also a railroad. The wholesale grocery in the picture is on a highway (in the foreground) and also on a railroad, back of the building.

These are only two examples of *wholesale trade*. In these or other cities there are companies which specialize in selling meats, hardware, candy, furniture, shoes, dresses, suits, hats, and hundreds of other things wholesale. Wholesale trade of all kinds is almost entirely city work.

Retail trade. The kind of trade that most people know best is *retail trade,* that is, selling goods in small quantities directly to the consumer. A wholesaler may purchase a freight-car load of canned peas from a cannery in Minnesota. Of these he may sell perhaps 100 dozen cans to one retail grocer. Probably the grocer will sell a few cans at a time to people who will actually use the peas.

In the United States, there are more food stores than any other kind of retail stores. Next in number are places where food is served, such as restaurants and ice cream shops. Figure 188 reminds us that there are filling stations in nearly all towns and cities. Selling ten gallons of gasoline directly to the user is retail trade. Another kind of retail trade is the agency type of trade, in which a dealer acts as an agent in selling the goods of a manufacturer directly to the consumer. Most automobiles are sold in this way.

Figure 189 shows a farm store, a familiar type of store in most towns surrounded by farm lands. From your own experience you can add to this list of places where retail trade is carried on. Your list may well include department stores, hardware stores, drug stores, dress shops, newsstands, and many others.

Traders in other lands. These descriptions of different kinds of trade have been based largely on trade in the United States. There are similar types of trade throughout the world. For example, the picture at the top of page 182 was taken in a small store in a town in Sweden. This merchant buys and

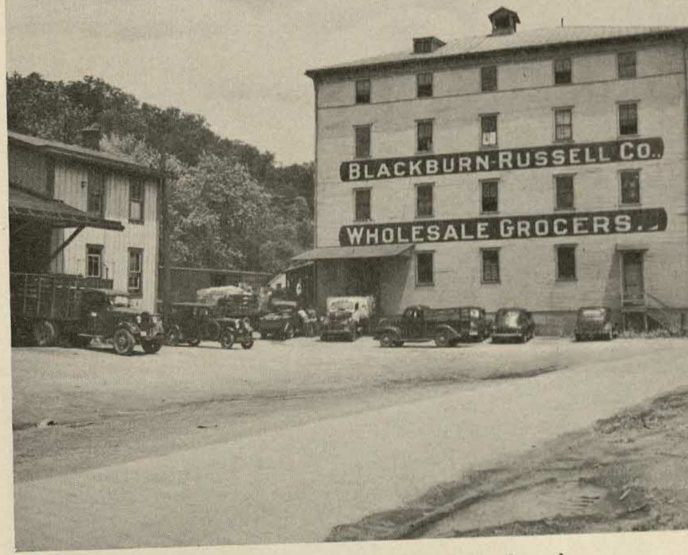


Figure 187. In Bedford, Pennsylvania *Photo by author*

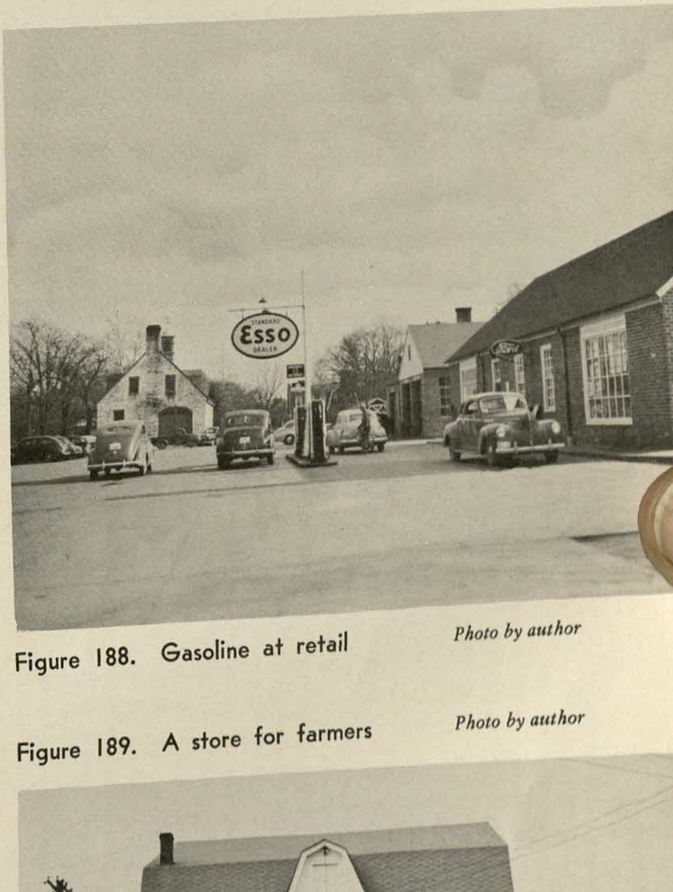
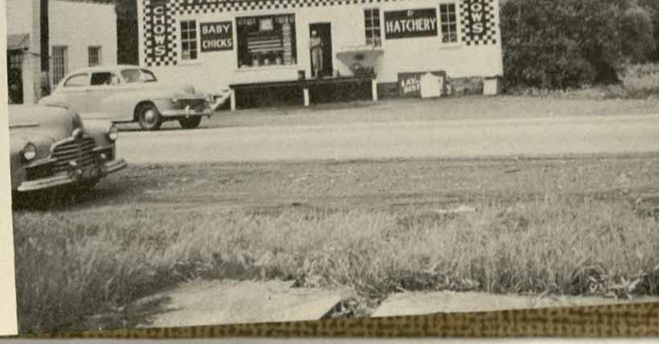


Figure 188. Gasoline at retail *Photo by author*

Figure 189. A store for farmers *Photo by author*



sells in much the same way as a merchant would who operated a store of this kind in our country. Every large city in the world has department stores. Figure 191 shows one in Japan, which is typical of others in different parts of the world.

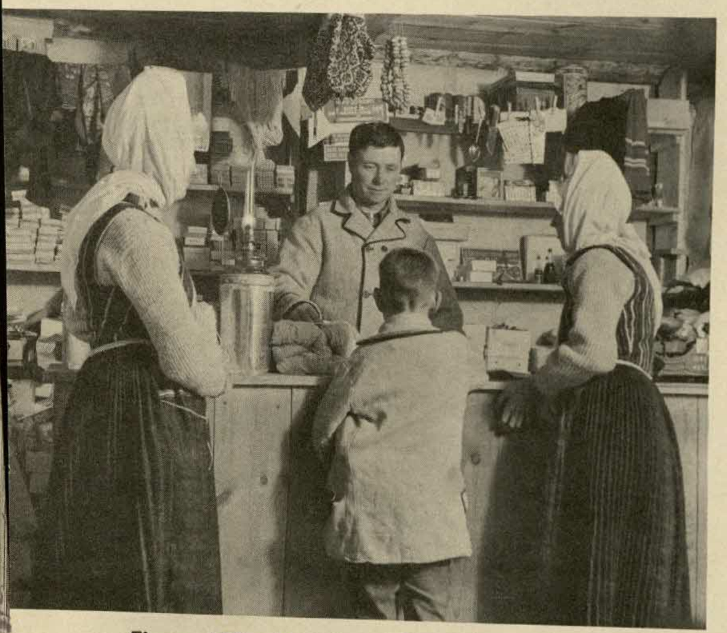
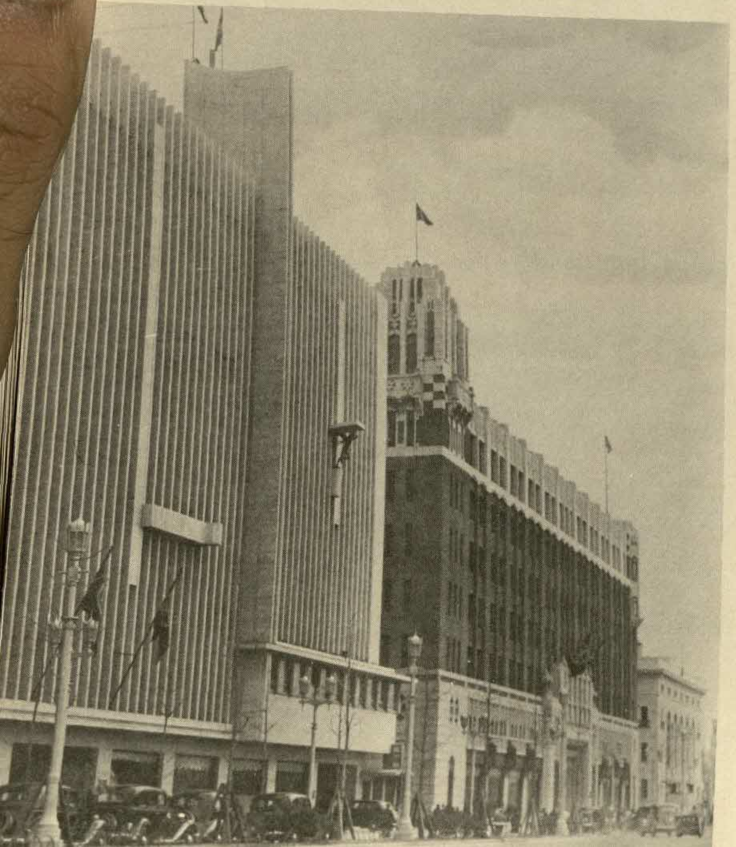


Figure 190. In a Swedish town © *Three Lions*

Figure 191. Department stores in Japan © *Gendreau*



As we have seen, however, the pattern of trade is not the same in all parts of the world. Open market places are common in Asia, Africa, some parts of Europe, and most of Latin America. Probably the picture on page 177 was taken on the one day of the week set aside by long tradition in that community as the day for the market. During the rest of the week the square will be rather quiet, and most of the buying and selling will be done in the shops which face the square.

Figure 192 shows a hardware peddler in Thailand. This peddler is really a traveling retail merchant. He goes from home to home, permitting each person to choose what he will from the rather wide selection he carries with him. There are peddlers of this kind in many lands. Now, however, the peddler has almost disappeared from the American scene.

In Figure 193 you are looking down on a market place at an oasis in northern Africa. It is early forenoon. The shadows still are long. Nomadic tribes from the surrounding dry lands have brought their surplus camels to sell in this so-called camel market. The buyers may sell the animals later to farmers near the coast or to owners of camel caravans who do not raise their own camels.

Camel herders are largely subsistence workers (p. 49). Yet they, like most other subsistence workers today, do sell a few things and buy a few things. As you can see, trade of one kind or another is part of the life of most people in the world.

International Trade

As there is trade between individual persons or communities, so, of course, there is trade between nations. As you have seen, the basic natural resources are not equally divided among the nations. No nation has all the resources that it needs. The wealthiest nation in the world requires some things from outside its borders. It can get these things by giving something else in exchange. The word "inter" means "between." So this trade between nations has come to be known as *international trade.*

International trade is usually measured by imports and exports. Some of this buying and selling, or importing and exporting, may be done by the governments of nations. When the government of Argentina, for example, sold a million bushels of wheat to the government of Britain, the two governments were carrying on international trade.

In most cases, however, it is not the governments of nations that carry on international trade, but individuals and companies within nations. For example, a company in New Jersey may sell 1000 barrels of gasoline to a company in Rotterdam, in the Netherlands. You or I may buy a book from a publisher in London. This is international trade. When we say that the United States exports gasoline to the Netherlands, we are thinking of the company in New Jersey and of the many other companies that also sell gasoline to companies in the Netherlands. When we say that the United States imports books from Britain, we are thinking of the books that you and I and many other people and companies buy from publishers in Britain.

International trade is usually much more complex than the preceding explanation suggests. For example, Brazil sells coffee to the United States. With part of the money received, it may buy automobiles from the United States. It may also buy coal from Britain. Britain may use part of the money received from the sale of coal to purchase corn in South Africa. South Africa, in turn, may use the money it received to purchase machinery in the United States. And the United States, then, may send the money received to Brazil to buy more coffee. It is well to remember, then, that in general, individuals or companies in the different countries are actually doing the trading.

All these are far too simple illustrations of what may happen in international trade. Actually, all the nations of the world are tied together in a complicated network of trade. Each country trades with many others, all of which at the same time may be trading with each other. If, therefore, trade is interrupted

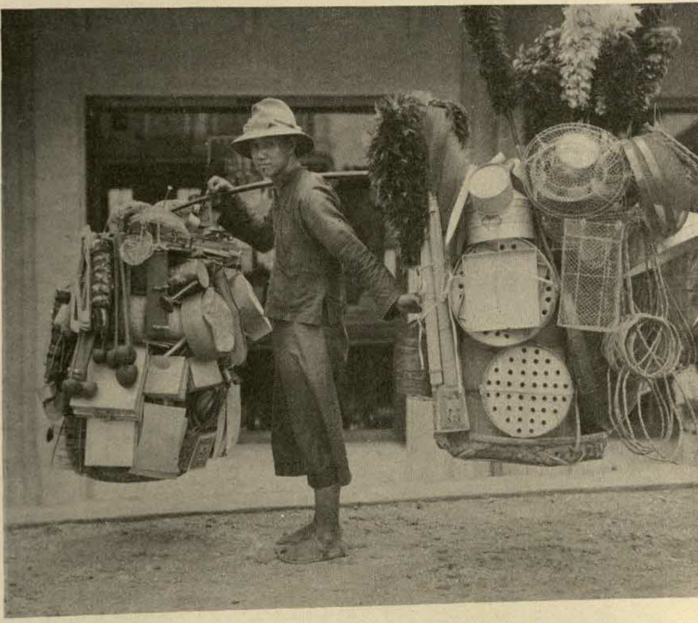
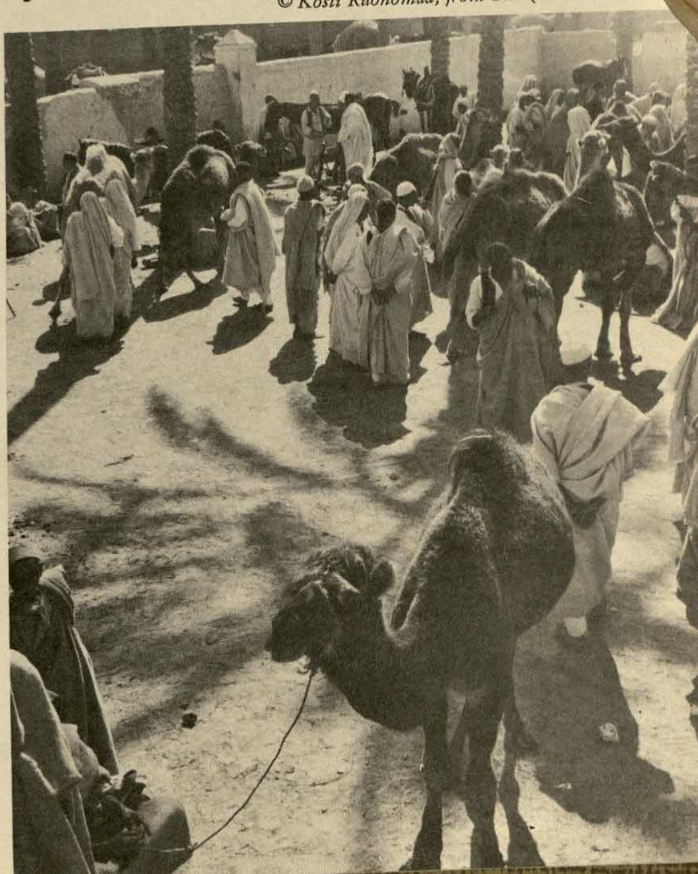


Figure 192. A peddler © *Ewing Galloway*

Figure 193. A camel market © *Kosti Ruohomaa, from Black Star*



between any two countries, the effects may be felt in many other countries.

Helps in Learning

1. Turn back to the story of Bedford (pp. 1-10). Which picture shows the chief market place? Judging by what you see in the picture, what do people buy or sell in that place?

2. What area is the chief market place in your community? Is it centrally located where people can get to it easily, or is it in an out-of-the-way place? Why?

3. Make a list of some of the people in your community who make a living from retail trade. What do they sell?

4. What kind of work is done in wholesale establishments? Is there any wholesale trade in the community in which you live?

5. Does anyone in your community buy raw materials for a living? If you lived in a town in the ranch lands, or in a land of forests, what different buyers would you then expect to find in the community?

6. Explain the difference between barter, and trade with the help of money. Suppose you were a farmer who had a sheep to sell and needed various items including a shovel, a new hat, and some wagon grease. Tell why it would be difficult to make such an exchange by means of barter.

7. What kind of direct trade between the producer and the final consumer might there be in your community? Is this barter, or trade with the help of money?

8. Every day, almost everyone uses something that has been imported, that is, something which has been a part of international trade. Certain foods are a good example. Try to discover several things which you own or use that come to you because of international trade.

9. In what ways do people gain by trade? Give examples to illustrate your answer.

Transportation—A Vital Link

Transportation workers. On earlier pages you have read of various ways in which men make a living, for example, by farming, mining, and manufacturing. The farmer produces large amounts of food; the miner brings great quantities of ore to the surface; the factory worker helps produce tons of frozen peas or stainless steel or china dishes. Most of these raw materials and finished goods are produced far from where they are needed. Transportation is the vital link—the link between the producer and the consumer of the goods.

In many countries of the world, the quantity of goods to be moved from one place to another every day is tremendous—so huge that it can scarcely be imagined. Towns and cities, in particular, depend for their very life on regular, large-scale movement of food, raw materials, and manufactured products. Without the vital link of transportation, the world as we know it could not exist.

The huge task of moving goods and people from place to place has created an important way of earning a living—transportation. Millions of workers in the United States alone earn their living from transportation. Some of these workers are railway engineers or airline pilots, ship captains or bus drivers. Some are mechanics who keep machinery in good condition or laborers who load the ships or lay railroad ties. Others are conductors, brakemen, firemen, or train dispatchers. Many more are office workers. Transportation is a great industry in itself.

Since cities and towns are the centers of trade and transportation, most transportation workers live in urban areas. Like everyone else, these transportation workers, too, depend upon trains, trucks, and ships to bring them

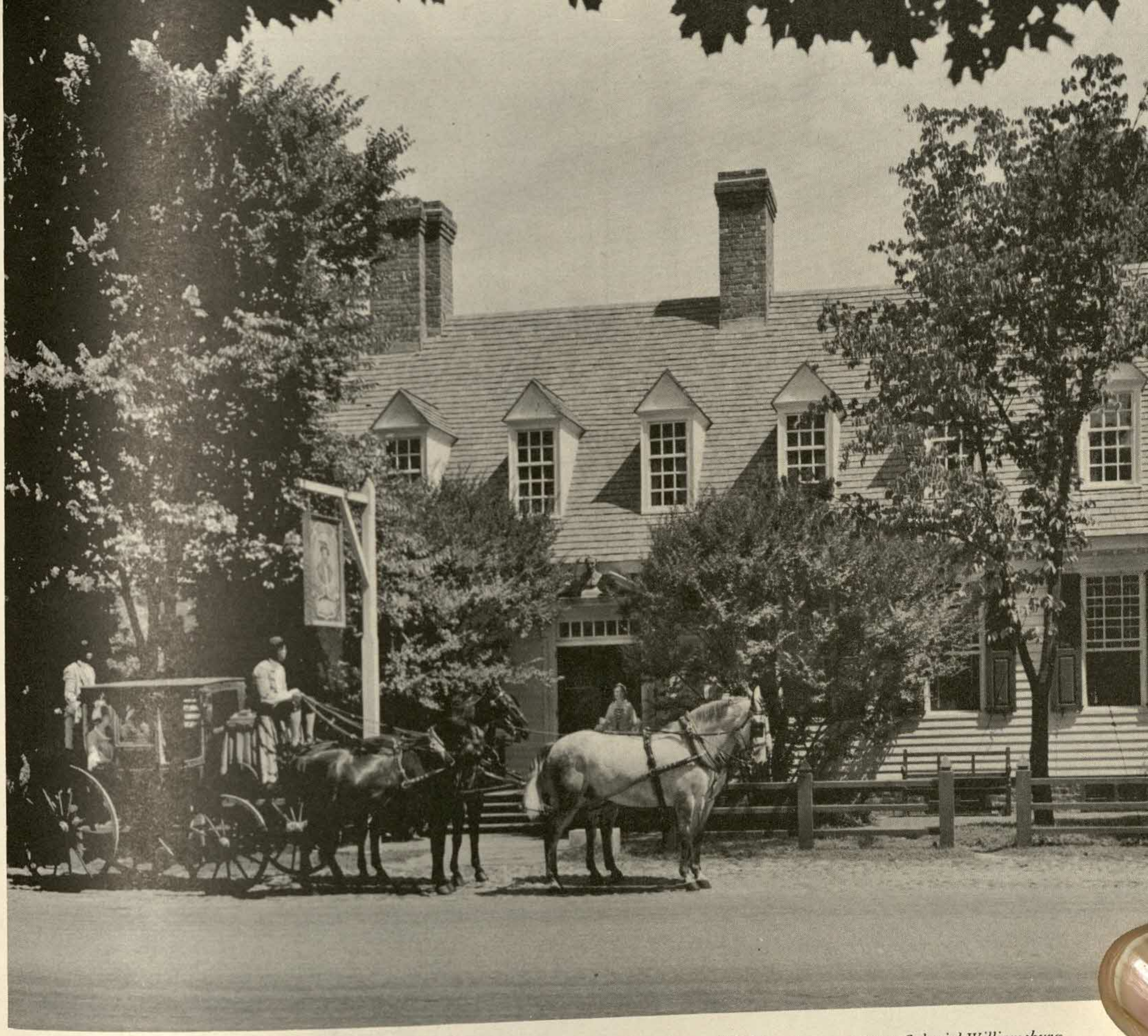


Photo of restored Williamsburg, courtesy Colonial Williamsburg

Figure 194. An old way of traveling

the food they eat and the goods they need.

How transportation has changed. It is a familiar story, now, that long ago the people of the world lived very simple lives, with few comforts or conveniences. In this kind of society, large-scale movement of food and goods was not necessary, because there were no large quantities of foods and goods to be moved. Most necessities of life were produced where the consumer lived.

Ways of transportation, of course, were found—the beast of burden, the raft and boat, the wheel and cart, the sailing ship. There were further improvements in transportation, as people gained experience and passed it on to later generations. But for thousands of years there was no change in the basic kinds of power used in transportation. In ancient times, medieval times, and in the first part of modern times, all transportation depended on the muscles of men or of animals, or on the power of the wind. The kinds of power that men knew how to use were few. Consequently, both transportation and the production of goods were limited.

The picture above shows the most advanced land transportation in the world about 200 years ago. A stage coach has stopped in front of an inn. In this vehicle a trip of 50 miles was a long day's journey, over the best roads of the time. Where roads were poor, such a journey might take much longer. And there were few good roads in any part of the world at that time.

Then came the Industrial Revolution, when men invented new kinds of machines and developed new kinds of power to run them. They used the power-driven machinery, as you have learned, in mines and in factories, on the farms and in the forests. Factories using new machines and new sources of power produced great quantities of thread and cloth, cooking utensils and shovels, flour and corn meal. Then a single factory could supply many thousands of families in many distant places with a necessity, such as nails, or a luxury, such as brass door knobs. This was a revolution, indeed.

Part of this revolution, and a vital part, was the use of new machines and new sources of power in transportation. The revolution in transportation was closely related to the revolution in manufacturing, for the increased quantities of goods had to be taken rapidly and efficiently to the people who would buy them. The changes in industry and transportation took place side by side over the years as part of the same revolution in ways of living.

The earliest use of new machines and new sources of power in transportation was the steam-driven boat. Then came trains which were pulled by steam engines over highways of iron rails. Later, the automobile, the airplane, and much transportation by train and ship were to depend upon petroleum for their power. New machines, such as the electric motor, the internal-combustion engine, and the jet propulsion engine, found their place in transportation. As these changes took place, vast networks of rail lines and highways were built. Airports, bus terminals, and port facilities grew to keep pace with the ever-increasing demands for transportation.

This revolution in transportation was based on the use of new sources of power. Now another new source of power—atomic energy—has been discovered. The revolution continues today.

Lands of Isolation

It would be a mistake to think that improved transportation has reached to all parts of the world. The map on pages 388-389 shows that only about half of the land in the world is served by water routes, railroads, and highways. The lands shown in white are lands of isolation.

Of course, these so-called lands of isolation are not completely shut off from the rest of the world. People travel about in them by dog-sled, camel caravan, or dugout canoe, as shown in the three pictures on page 187. Some of these lands also may be reached by airplane, as suggested by the map on page 379.

Really, most of the lands of isolation are not lands of great urban population or extensive production of surplus goods. There are many subsistence workers in these lands. The development of highway systems and railroad networks goes hand-in-hand with the production of goods and the growth of trade on a large scale. For this reason, the white areas on the transportation map tell us something about the ways of living in these lands.

In the far north. Except in Europe, nearly all of the lands north of about 60° N. latitude are shown in white (pp. 388-389). The broken lines which reach across these lands show where river steamers sail during the short summer season.

In most of these isolated northern lands the fastest and easiest winter travel is by dog-sled. In summer, it is very difficult to travel overland in any way, particularly in the treeless tundra lands. These lie between the great northern forests (p. 127) and the Arctic Ocean. The warmth of summer may thaw the ground a few feet down, making a spongy mass that is not easy to travel on. Mosquitoes

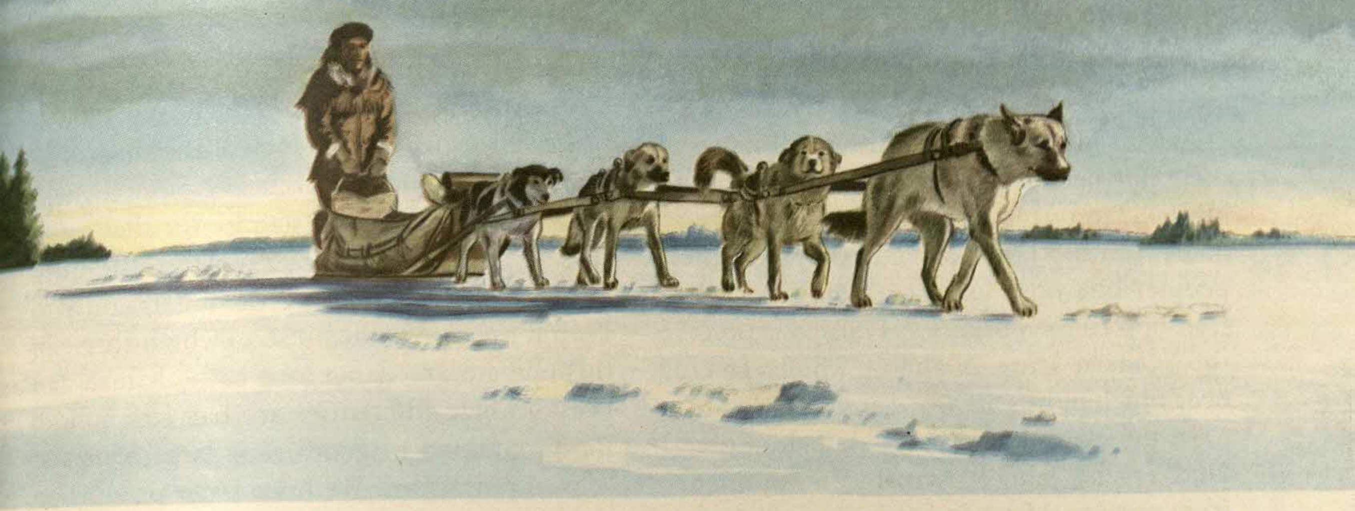
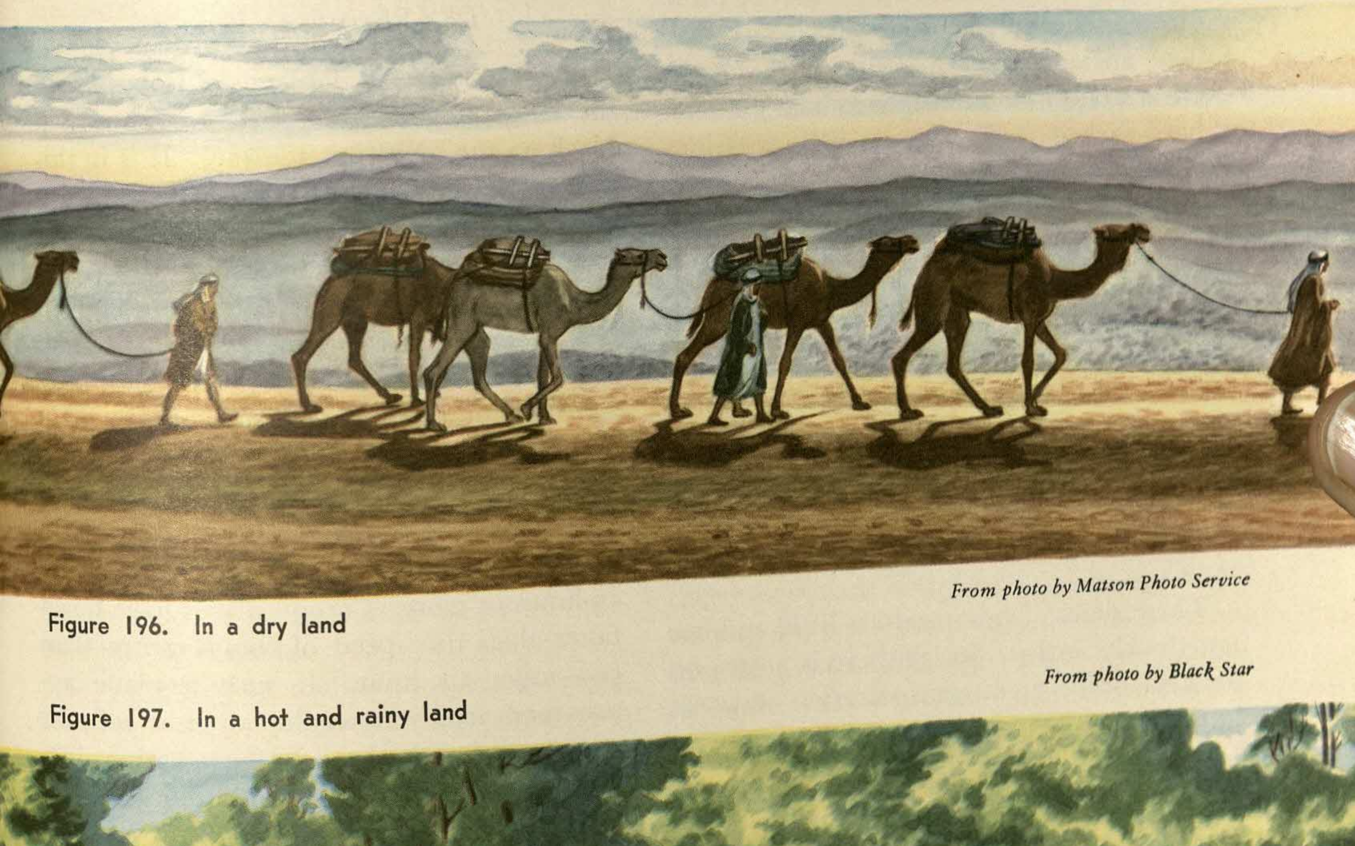


Figure 195. In a cold land

From photo by National Film Board of Canada

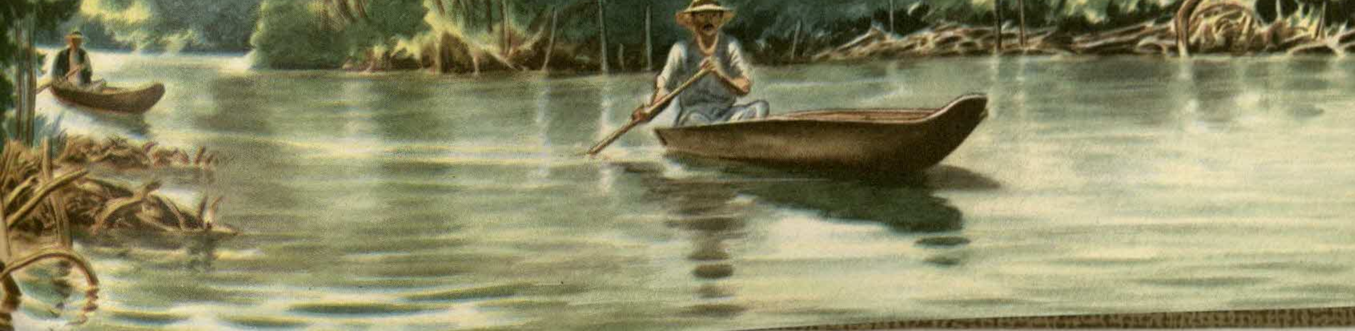


From photo by Matson Photo Service

Figure 196. In a dry land

From photo by Black Star

Figure 197. In a hot and rainy land



rise by the thousands, it seems, with each attempted step.

As you have read, the chief inhabitants of these northern lands are Eskimos and certain hunters and trappers in the great forests. Some transportation is necessary for these people, but none of them could be called transportation workers. Transportation in the modern sense is almost wholly lacking over much of this area.

In the great deserts. A wide belt of desert land reaches almost across two continents, from western Africa to northeastern Asia (pp. 372-373). On the transportation map, you can see narrow ribbons which reach from one side of this dry land to the other. Most of these indicate modern desert highways, which may follow ancient caravan routes. Of course, even a modern desert highway may be only a hard-packed trail, with no filling stations for perhaps hundreds of miles.

In the desert away from these highways, the camel caravan remains a chief means of transportation even today. The caravan in Figure 196 carries freight from a city at the edge of the desert to isolated oases. It is not uncommon for the owner of a caravan to combine the work of trade and transportation.

In the Australian desert, horses and specially built automobiles, as well as camels, are used for travel where there are no highways.

These desert lands produce little and are not thickly settled. So far there is no reason for developing great transportation networks in these areas.

In the tropical forests. Within the tropics, most of the white areas on the transportation map (pp. 388-389) represent tropical forests. By far the largest is the Amazon forest in South America. The main branches of the Amazon River are outlined on the map, for they can be reached by river steamers. But most of the vast network of waterways can be used only by very small craft, such as the dugout canoe in the picture (Fig. 197).

Travel by land is little developed in most of the tropical forests. The heavy rainfall makes the ground soft much of the time. The high temperatures and heavy rainfall help trees and brush grow so rapidly that, even after a path has been cut through the thick undergrowth, men must work constantly to keep it open. Various insects which thrive in this climate are dangerous to both man and beast. These difficulties are barriers both to the production of goods on a large scale and to transportation. Without large production there is little reason for a great development of transportation.

The Shrinking World

Side by side with the lands of isolation are the lands of good transportation, shown in black on the map (pp. 388-389). It is in this half of the world that man has made the greatest use of the new kinds of power. It is in this half of the world that the great transportation networks exist.

Over these networks, men and goods move at a speed little dreamed of, even a century ago. An automobile may travel farther in an hour than a stagecoach did in a long day. Trains and ships operate on fast, regular schedules. The airplane moves fastest of all. Some passenger planes may average 400 miles an hour, or more. Certain planes have flown faster than the speed of sound, more than 700 miles an hour. If such a plane approached you, you would not hear it until it arrived, for the sound of its coming does not move as fast as the plane itself.

It took Magellan's ships about three years to sail around the world, shortly after the voyages of Columbus. Now you can fly around the world in less than a week on regularly scheduled airlines. If you flew in one of the newest military planes, and did not need to stop for fuel or repairs, you could fly to the most distant part of the world in less than one day.

Because man can travel so fast, it is said that he lives in a shrinking world. Measured in miles, the earth's size, of course, has not changed. But if measured in the time it takes to travel around it, the earth is becoming smaller year by year and almost day by day.

In one half of the world, however, the people can only creep along, so to speak, traveling for the most part as they have traveled for hundreds of years. To those who live in the lands of isolation, the world is almost as big as it ever was. Meanwhile, the other half of the world has been tied together closely by good transportation. There people and goods are moved easily, cheaply, and if necessary, at great speed. To these people, it is truly a shrinking world.

Helps in Learning

1. Turn to the map of the United States, pages 230-231. How does it show that cities are centers of transportation? Name six great transportation centers in the United States.

2. Try to find how people traveled in and out of your community 50 or more years ago. What kinds of transportation now serve your community? What difference is there in the power which is used?

3. Is transportation in your community affected by the weather? How?

4. Weather that is good for the farmer may not be good for transportation workers. Illustrate this by examples.

5. Compare the transportation map, pages 388-389, with the population map, pages 370-371. Are most of the lands of isolation thinly settled or thickly settled? Would you expect, then, that the people who live in the isolated lands make up much more, or much less, than half the population of the world?

6. The lands of isolation are also lands where there are many subsistence workers. Why should this be expected?

7. On the transportation map, find the broken line reaching northward across Canada to the Arctic Ocean. Find what this route is, referring to the map of North America, page 382. Is it likely that this route is used as much in winter as in summer? Why or why not?

8. What has held back land transportation in tropical forests?

9. What does the phrase "the shrinking world" mean?

10. In two large areas in the world, a network of good transportation covers nearly all the land. What are these two areas (pp. 388-389)?

11. Modern transportation has helped to strengthen the interdependence of people. Tell why you think this is so.

The World's Waterways

Old and new. The pictures on pages 190 and 191 show how men use three great water highways, a river, a lake, and the ocean. Ever since some man first floated across a stream on a log, men have made use of water transportation. For a long time, nearly every large boat was driven by oars or sails. Now, as you can tell from the smokestacks in the pictures, the power of burning coal or petroleum drives ships through the water.

Using the world's rivers. The two steamers shown in the picture at the top of page 190 are on the Rhine River in Germany. The large boat carries sightseers; the smaller boat carries cargo. The Rhine, in normal times, is one of the great river highways of the world. As the map shows (p. 394), it rises in the mountains of Switzerland, and flows across western Germany and the Netherlands to the sea. In places, cities and towns almost line its banks. Thousands of ships use this river highway every day. As much as one hundred million tons of freight have been carried on it in a single year. On the Rhine, as on most of the great river highways, freighters far outnumber passenger boats.

There are many rivers in the world which are famous as routes of travel. The Danube, the Nile, the Volga, the Yangtze, the St. Lawrence, the Amazon, the Congo—all are familiar names. In our own country, the Mississippi, the Ohio, and the Hudson are famous

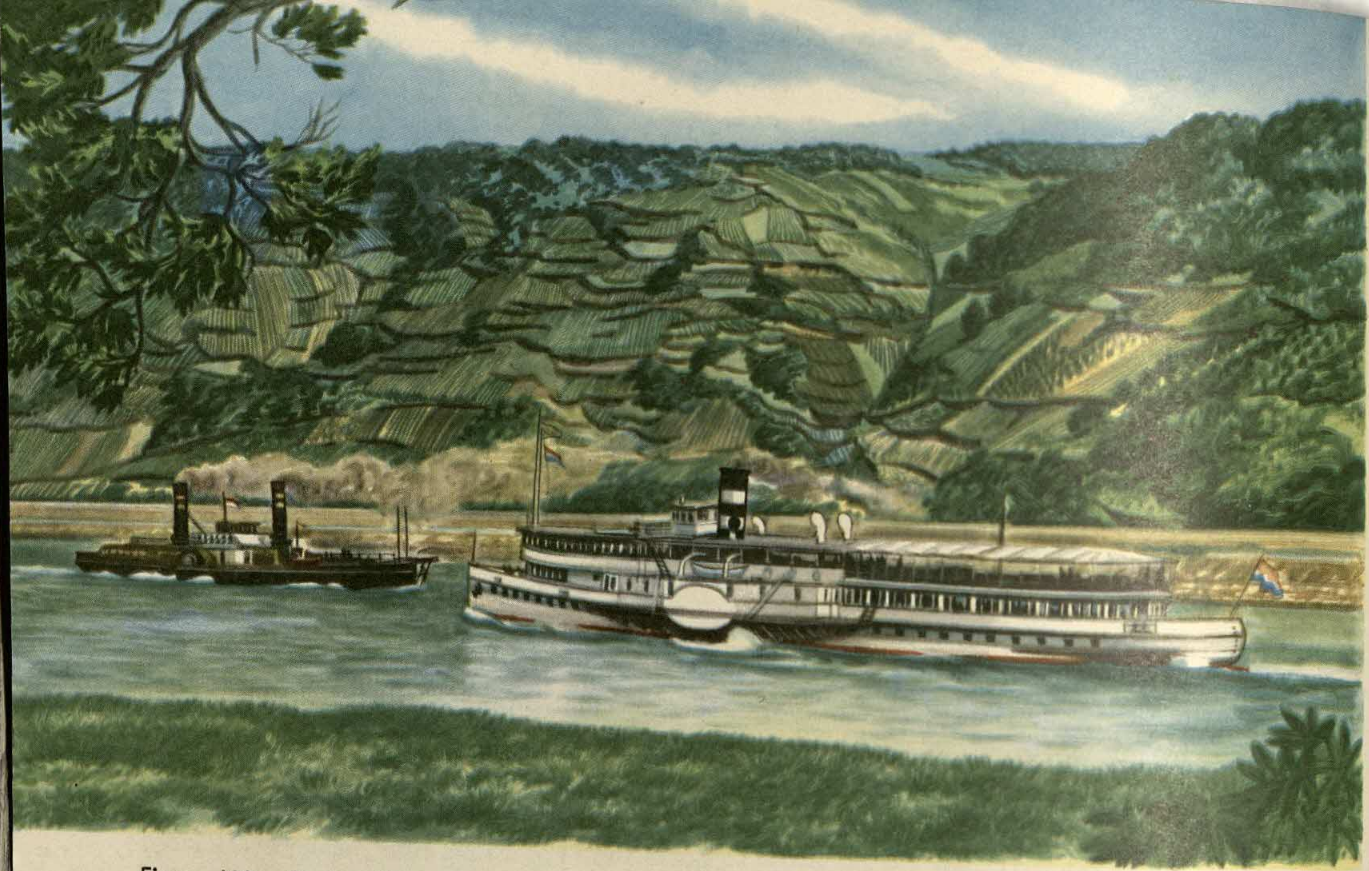
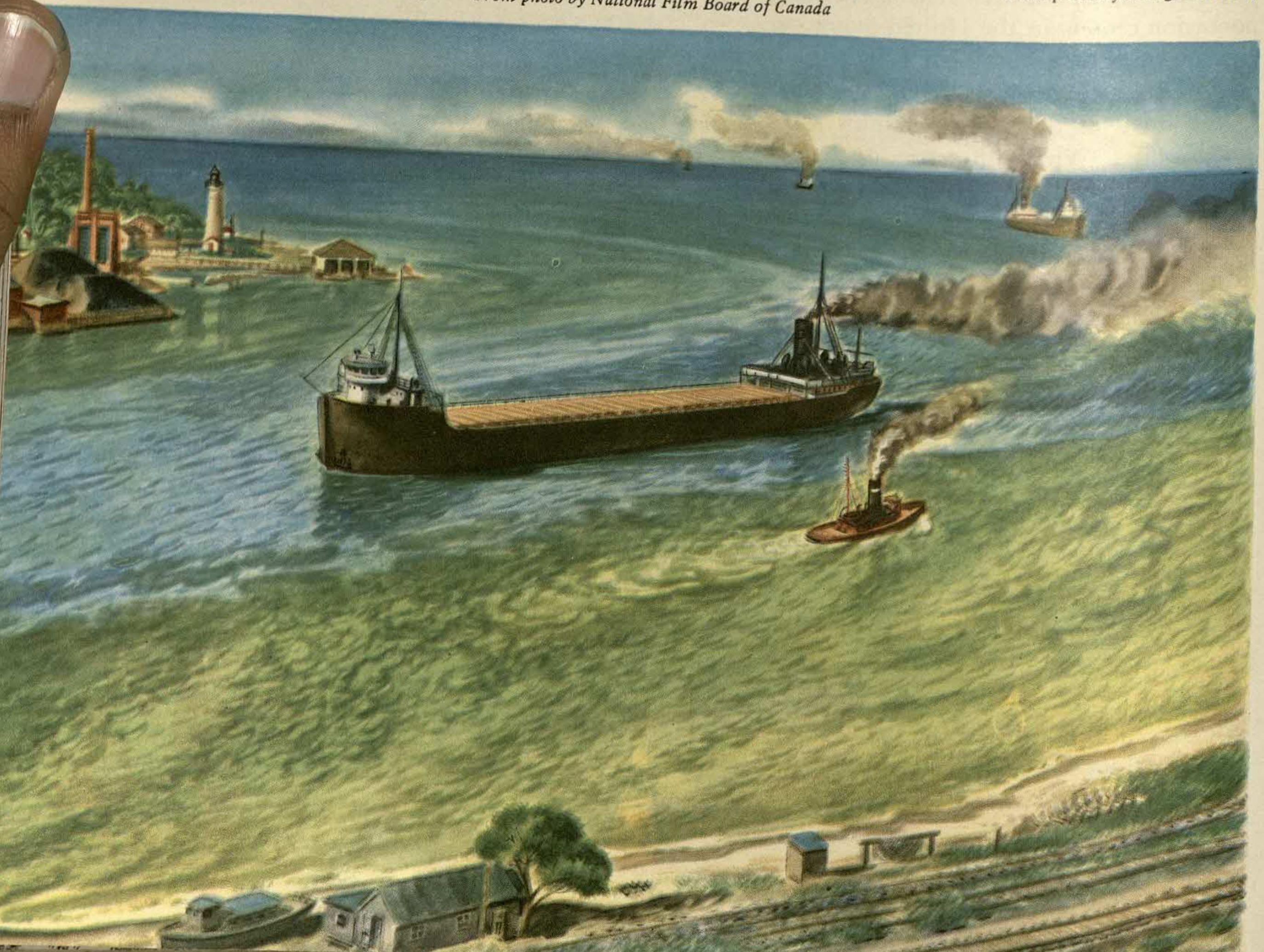
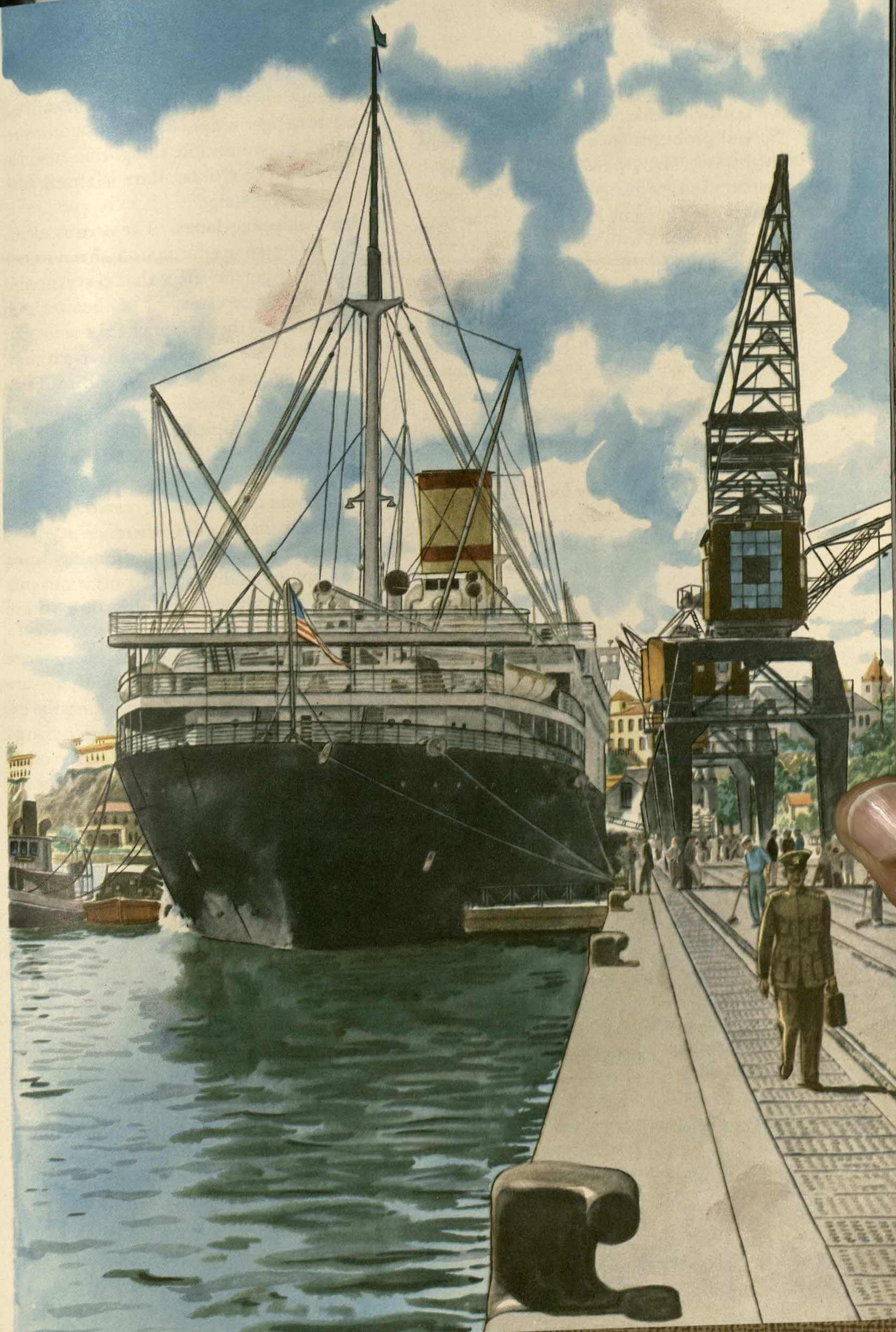


Figure 198. On the Rhine River *From photo by Gendreau*

Figure 199. On Lake Michigan *From photo by National Film Board of Canada*

Figure 200. Seaport on the Atlantic →
From photo by Ewing Galloway





routes for the commerce which has fed the cities on their banks.

Special problems go with the use of rivers as highways. Many new and faster forms of transportation are available today. Moreover, rivers may be closed by ice for part of the year, may vary in depth with the rainfall, may shift their channels and develop treacherous currents and shoals. In spite of these handicaps, however, rivers still carry much freight, especially bulky freight which is near the waterways. For, in general, river transportation is cheaper than competing forms of transportation. Rivers continue to serve many of the cities and towns which they so greatly helped to develop.

Lakes as highways. The long, narrow ship in the picture at the bottom of page 190 is a lake freighter, coming in to a harbor near Chicago on Lake Michigan. In the distance, there are other ships, bound for the same harbor.

The picture suggests that the Great Lakes are a very important waterway. They are, even though ice closes the lakes for most shipping during the winter. These lakes, together, form the largest body of fresh water in the world. Over them, a ship may travel more than a thousand miles from east to west.

Large freighters and passenger ships also sail on the interior lakes of Africa and Asia. As routes of transportation, however, none of these rank as high as the Great Lakes.

Sailing the wide seas. The greatest waterway of all is the ocean. In the picture on page 191, a modern ocean freighter has been loaded, and is ready to sail. Such ships can hold more than 100 railway carloads of cargo, and carry it non-stop for thousands of miles. The total freight carried by ocean ships is many times as great as the freight carried by all the lake and river steamers in the world.

The passenger ships of the ocean are not so numerous as the freighters, but they are much more famous. The name of just one ship, the *Queen Mary,* for example, is known by millions of people in dozens of countries. These passenger ships, by the way, are perhaps the largest movable things that man has ever made. The *Queen Mary* is almost one-fifth of a mile long.

Ocean shipping lanes. The oceans of the world make up one enormous highway. Over this highway go the ships that carry needed commodities from one part of the world to another. Across the Atlantic and Pacific our exports, such as cotton, tobacco, machinery, and wheat, move to other lands in ships. From Australia, Brazil, Sweden, Cuba, and many other countries, ships bring us the wool and coffee, the paper and sugar which are some of the products we need.

On the vast surface of the oceans there are millions of square miles where ships rarely go. There are also so-called shipping lanes, where ships move almost in a continuous procession. Frequently several ships are within sight of each other.

The fact that some areas of the oceans are little traveled, while in others there are heavily-traveled shipping lanes, is easily explained. Ships sail from seaports where cargo and passengers are waiting. They sail to other seaports where the cargo and passengers are to be taken. And they naturally follow the shortest practical routes between the ports. They rarely have occasion to use the vast stretches of water which do not happen to lie between one seaport and another.

The shortest practical route, of course, is not always the most direct route. The map on page 378 shows the outstanding shipping lanes or ocean routes in the world. As you can see from the map, the shortest route between eastern United States and eastern Asia would lead across the Arctic Ocean. But most of the Arctic Ocean is filled with ice, so, of course, ships cannot take this direct route. The main shipping lane across the North Atlantic to Europe is not as direct as it might be because of the danger of drifting icebergs from the Arctic. Sometimes, islands where fuel is available attract ships from their most direct route across the ocean.

The width of each line on the map suggests the relative importance of the shipping lanes. As you might expect, the busiest routes connect areas where there are many people and much industry. The greatest number of ships travel between ports which have the greatest amount of business to give them.

Man-made waterways. To connect one waterway with another, men have built canals or have deepened existing waterways so that they could be used for water traffic. Perhaps the most famous canal in our country was the busy Erie Canal, connecting the Hudson River with Lake Erie. This canal was built more than one hundred years ago. The Barge Canal, which is larger and deeper than the old Erie Canal, now follows the same route. There are many inland canals in other countries. But canals are expensive to maintain and must compete with other forms of transportation.

In a class by themselves are two canals which join oceans. When the Panama Canal (p. 382) was completed, a great doorway had been opened between the Atlantic and Pacific oceans. The Suez Canal (p. 386) links the Mediterranean Sea with the Red Sea, thereby connecting the Atlantic Ocean and the Indian Ocean. These two canals have aided ocean shipping tremendously.

Helps in Learning

1. Turn to the map of the United States, pages 230-231. Find the following rivers: Mississippi, Illinois, Ohio, Hudson, James, Columbia. These are among the chief river highways in our country. Which three of these streams are parts of one river system? What parts of our country are not served by these river highways?

2. Make a simple sketch map showing the five Great Lakes. Mark the chief cities on the shores of these lakes. Then draw lines through the water area connecting the cities of each lake with those of the other lakes. These lines stand for shipping routes. Why is Detroit particularly well located for lake transportation?

3. Draw an outline map of the various continents as shown on pages 368-369. Add the chief ocean shipping routes as shown on page 378. Then tell why the polar map on page 378 is better than the other map for showing how the ocean routes circle the world.

4. Mark in red on your outline map of the world the route which a ship would need to follow in sailing from New York to San Francisco, before the Panama Canal was opened; in sailing from London to Bombay before the Suez Canal was dug. Mark in blue the shortest ocean routes which can be followed between these places today. Explain how these canals have helped ocean shipping.

Railway Transportation

Workers on the railroad. Day or night, in most countries of the world, you can hear the whistling of trains as they carry passengers and freight from city to city. Everywhere that this sound is heard, there are men whose work it is to keep the trains moving, at all hours and in all kinds of weather.

The picture at the bottom of page 194 was taken in the cab of a locomotive driven by Diesel engines. The man shown is the engineer. His assistant is known as the fireman, though on this kind of locomotive he has no fire to tend. Somewhere back in the coaches is the conductor, who is responsible for the train and its passengers. Brakemen, porters, dining car waiters, and railway post office mail clerks are all at work. Each man has his task to perform, while the engineer and fireman watch the track ahead, and the train rolls along at perhaps 80 or 90 miles an hour.

The picture at the top of page 195 shows a freight train conductor, standing on the steps of a caboose. That car is the traveling home of the train crew.

Figure 203 is a reminder of the thousands of men who must service the trains, both passenger and freight. This worker is making sure that one of the wheel bearings is in good condition. Trains, like buses and trucks, must have inspection, lubrication, and repairs when needed.

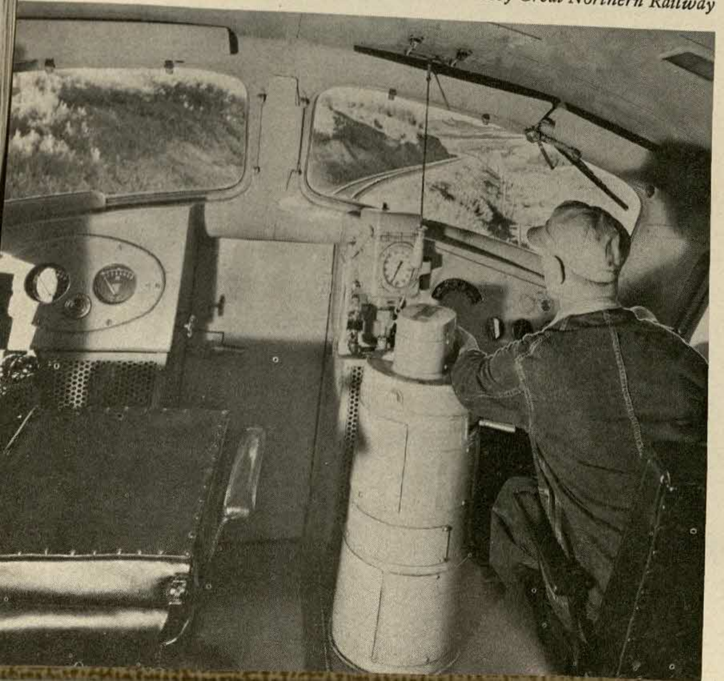
Many other workers are needed to maintain the operation of a railroad system. The "section crews" care for the tracks. A station agent sells tickets and manages the affairs of the station. Train dispatchers direct the movement of the trains. Office workers handle the complex business of the railroads, keeping track of the shipments, buying the supplies, and checking the bills. In the United States alone nearly a million and a half people earn their living through railroad transportation.

Paying the cost. Transportation by rail, like every other form of transportation, is a service. It does not produce goods—it merely moves goods and people from one place to another. Yet this service is enormously expensive. To pay regular wages to nearly a million and a half persons, to buy and maintain cars and locomotives, to build stations, lay tracks, pay taxes—this is costly.

Who pays the cost? Everyone who buys a loaf of bread or a package of cheese pays part of it. The cost of transportation is included in the selling price of the goods transported.

Figure 201. An engineer's view

Courtesy Great Northern Railway



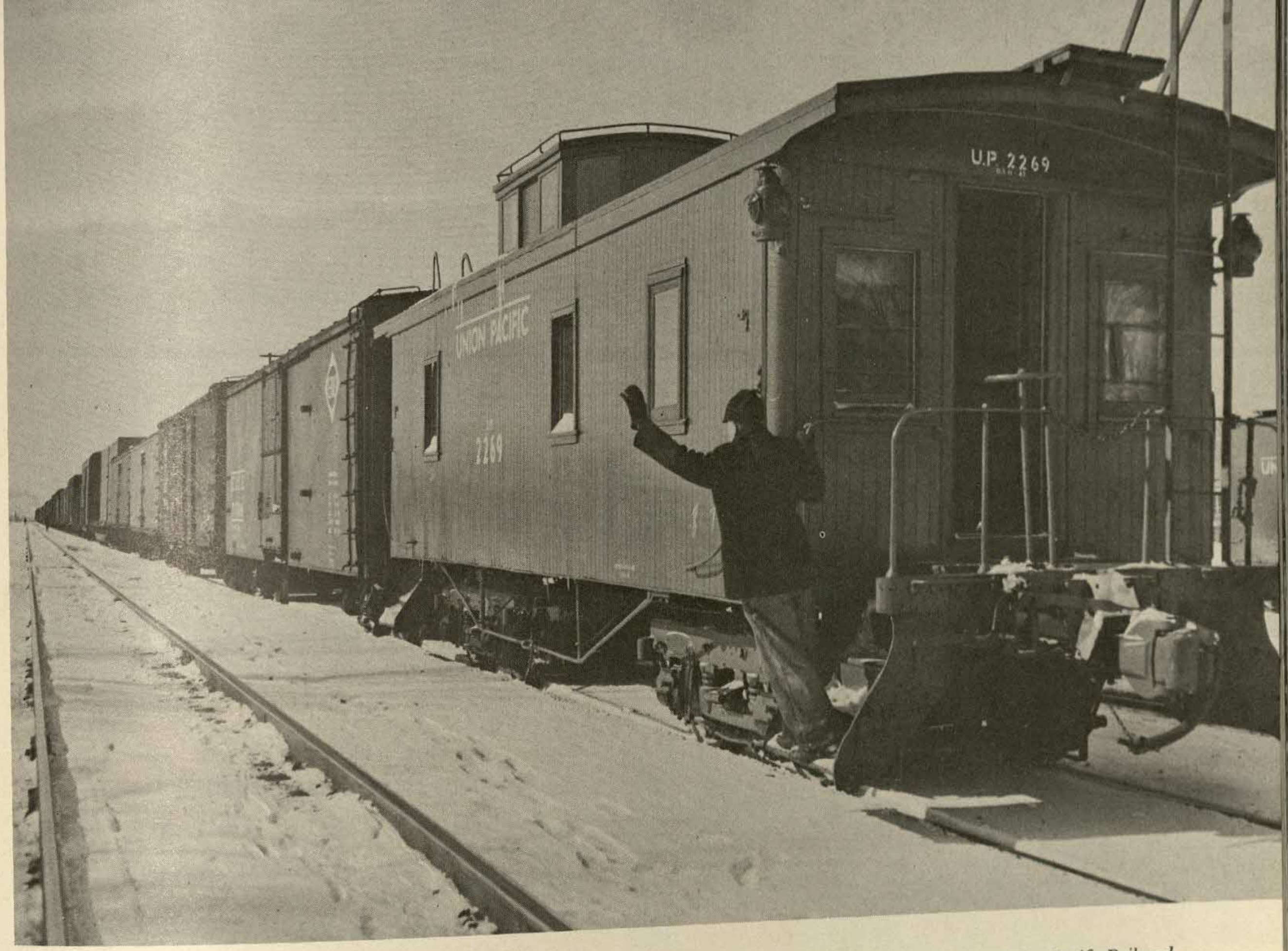
The people, too, pay the cost of railroad transportation in another way. In the days when the railroads were being built the government wished to help the railroad builders. So great grants of public land were made to the railroad companies. These lands given to the railroads by all of the people, through their government, helped in developing the greatest railroad system in the world.

Although the total bill for transportation —railroad, water, land, and air—is enormous, we actually save money by paying it. For example, good transportation makes it possible to manufacture great quantities of a product in one efficient factory at low cost. The savings in the cost of production are usually far greater than the cost of transporting the product to market.

Spreading over the world. The railroad is the direct result of the Industrial Revolution, and is comparatively new. In 1830 there were only 23 miles of track in the United States. Now there are ten thousand times as many, or about one-third of the railroad mileage in the world. And in the world as a whole, the railroad has become the great carrier of freight and passengers on land.

This tremendous development of the world's railroads was made at great cost and in the face of great difficulties. Tops of hills were cut down and valleys were partly filled in, for an ordinary train can climb only a very gradual slope, or "grade." Tunnels were dug through solid rock. Rivers were bridged. The obstacles of soft ground and heavy winter snows were overcome. Today trains run over the high Andes and through the snowy Alps, as well as on the level lowlands of western Europe and across the barren desert of southern Australia. Most of the world's railroads are concentrated in the areas shown in black on the transportation map (pp. 388-389). This is particularly true in the United States and Europe.

Some of the differences. Railroads were built in many parts of the world according



Courtesy Union Pacific Railroad

Figure 202. A freight conductor

to the tastes and needs of the men who built them. As a result, there are some interesting differences between our railroads and those in some other lands.

In India, for example, one cannot walk on a train from car to car, and a trip to the diner must be postponed until the train stops at a station.

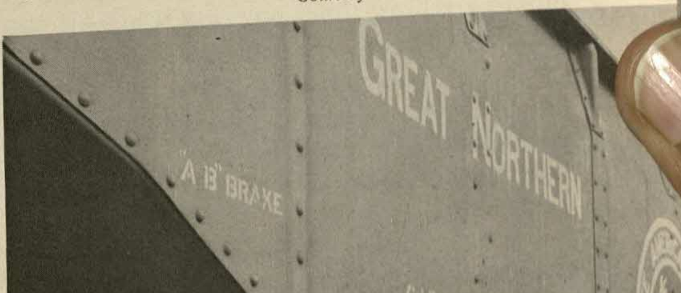
In Russia, the gauge, or distance between the rails, is wider than the gauge used in neighboring countries. This means that the cars and engines of Germany, for example, could not run over Russian tracks.

In Australia, the transcontinental railroad has two different gauges, so that on a transcontinental journey all passengers and freight have to be transferred from one train to another.

Such differences in gauge are handicaps to good railway transportation.

Figure 203. Servicing a train

Courtesy Great Northern Railway



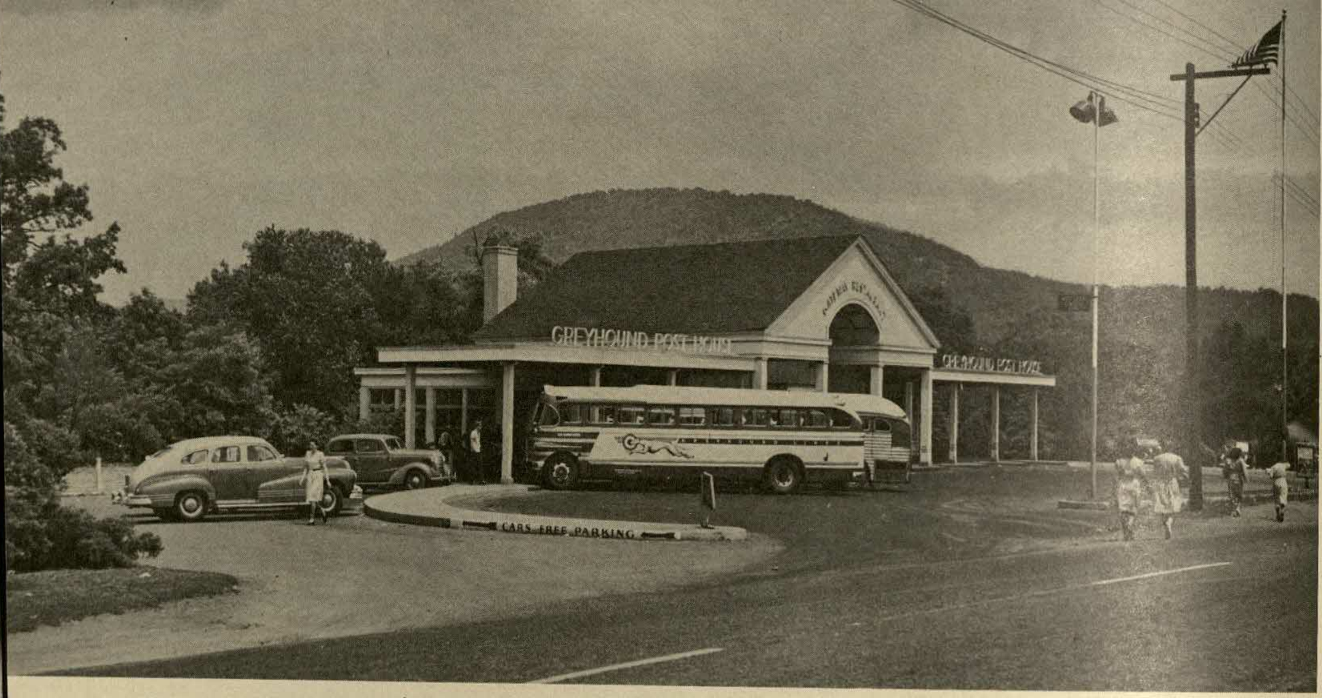


Figure 204. A new kind of station

Photo by author

Helps in Learning

1. What railroad workers have you noticed when you traveled by rail or visited a railway station? In what ways is weather a problem to the railroads near your home?

2. For many reasons, Chicago is the greatest railroad center in the world. Do you think that many natural obstacles had to be overcome in building railroad lines out from Chicago? See maps on pages 230-231, and 380-381.

3. Suppose the railroads of the United States had been built on several different gauges. How might that have held back transportation?

Along the Highways

Roads, old and new. There is nothing new about a road. Long ago on certain overland routes the grasses and earth were packed by human feet, by horses, and by wagon wheels. Muddy or dusty in summer and covered by snow in winter, these roads were still the routes of travel.

What is new is a system of roads—a planned network of paved highways reaching to almost every community in an entire nation. Even fifty years ago such a system did not exist.

An invention was responsible for the revolution in road-building. This invention was the internal-combustion engine, burning gasoline, and providing power for automobiles, buses, and trucks. With the coming of the automobile there was a spurt of road-building from coast to coast. A nation on wheels demanded the highways, and the highways were built.

In our country today, private automobiles far outnumber all other vehicles on the highways. But there are hundreds of thousands of transportation workers who move goods and passengers over the roads by truck and by bus.

Travel by bus. The bus of today is the stagecoach of yesterday. Motors with hundreds of horsepower have replaced the horses shown on page 185. Fifty people may now speed in air-conditioned comfort along a route where once a half dozen stagecoach passengers jolted slowly through the dust. The old inns have been replaced, in part, by bus stations, some of which are as modern as the one in the picture above.

Bus transportation has grown very rapidly in the United States. Bus lines needed to lay no rails, for the highways already built were ready for their use. Their equipment was less expensive than that of the railroads. They could afford to serve communities that are on no main line railroad. Often they could offer more frequent service than the railroads, and on some routes were able to charge lower fares. So in spite of high taxes and the need to obtain a franchise, or permission to operate, for each route, bus lines have prospered. A few years ago it was estimated that nearly half of the travelers who used public transportation from city to city in the United States traveled by bus.

The bus lines, like the railroads, require many skillful workers. Most bus drivers are engineers and conductors combined. There are station agents, mechanics who service the vehicles, bus dispatchers, and office workers, all of whom earn a living by bus transportation.

Freighters of the highway. Great trucks, like the truck in Figure 205, are a familiar sight in many parts of the United States. Like bus travel, the movement of freight by truck has increased enormously in recent years. It has been estimated that as much as one-fifth or one-fourth of the freight carried by land in this country moves by truck.

Some truck companies specialize in long-distance hauling. For example, one large firm operates over a 2500-mile route from Oakland to Chicago. This truck line divides the route into ten sections, and changes crews on its trucks at the end of each section. It employs office workers and mechanics, just as a bus line does.

But not all trucking firms are large by any means, and many trucks are used largely for short hauls where the truck enjoys advantages over all other forms of transportation. A truck can call at the door for a shipment and deliver it directly to its destination. Trucks can serve farming areas where no rail lines exist. They can bring produce directly from farm to city, or from farm to railroad. They can and do deliver merchandise from store to home. Trucks are so important in trans-

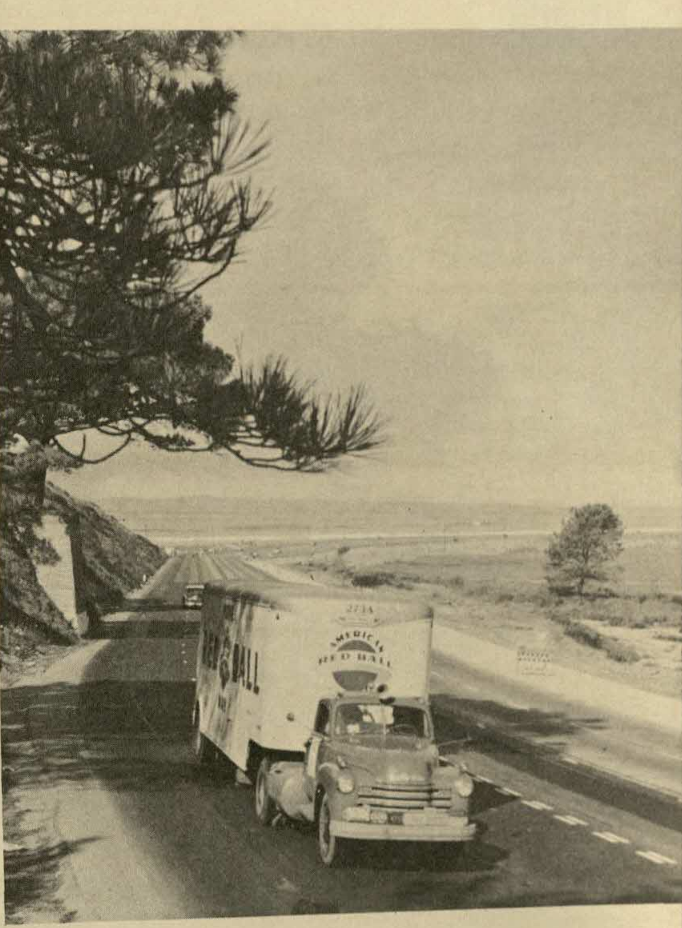


Figure 205. A highway freighter © *Black Star*

Figure 206. A bus in China © *Black Star*

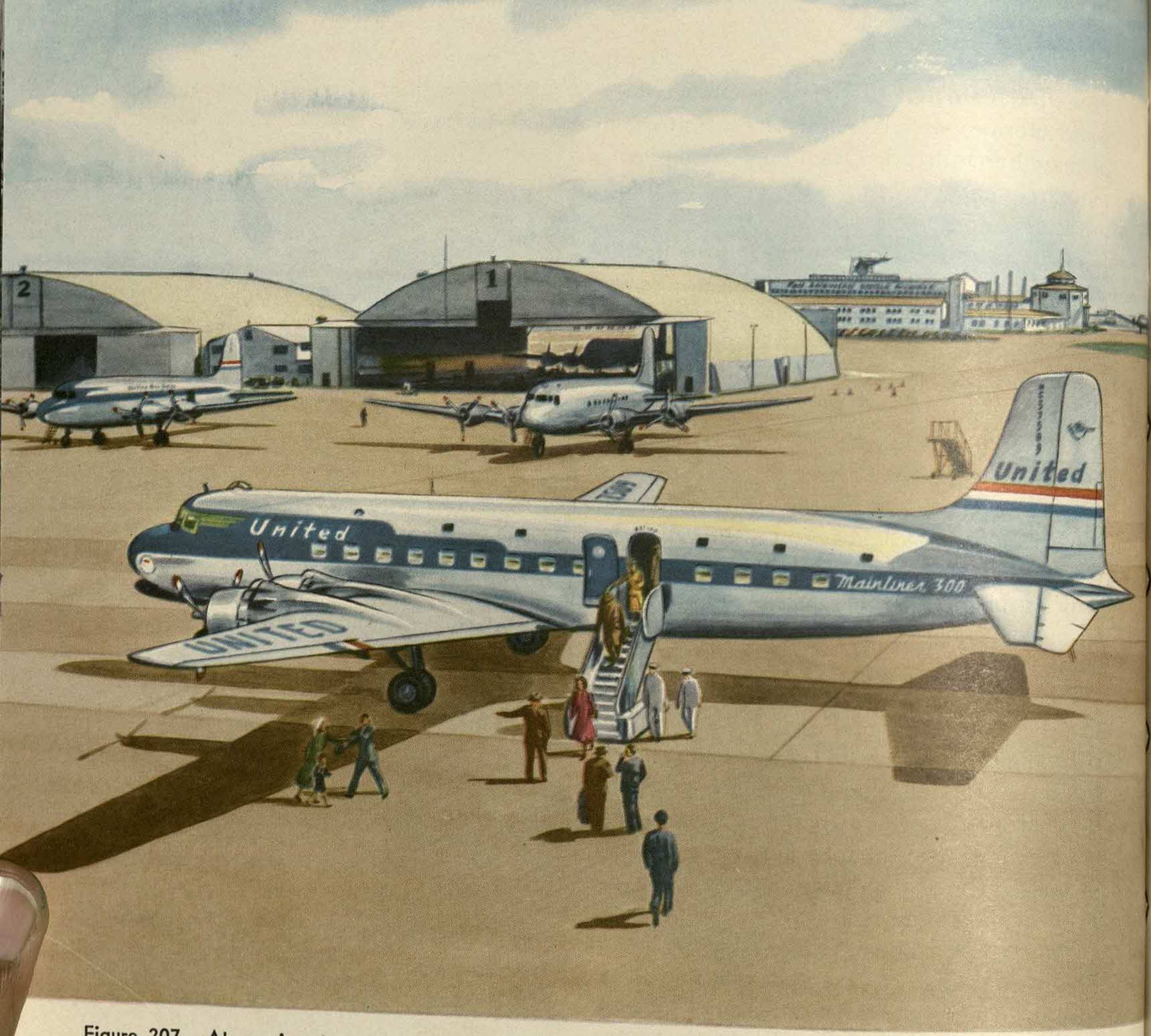


Figure 207. At an airport

From photo by United Airlines

portation that a trucking strike can paralyze a city.

Highway transport in other lands. The use of motor vehicles has long since spread from the United States and western Europe to most parts of the world where there are good roads (pp. 388-389). Vast areas of deserts and mountainous lands, not served by railroads, are within reach of truck and bus routes. Nearly every large city has modern buses, whether or not it has street cars. Figure 206 on page 197 shows a bus in use at the outskirts of a Chinese city. The stop lights, red and green, mean "stop" and "go" in all lands.

The United States, however, remains the great "nation on wheels." About two-thirds of the world's automobiles, trucks, and buses are in this country.

Helps in Learning

1. Most cities are important highway centers. Use a road map of your state to prove this.

2. Would you prefer to travel by bus or train? Why?

3. You have seen many trucks near your

home. What are some of the things that you have seen carried by truck?

4. What types of work would you expect to be rather similar in transportation by train, truck, and bus?

In the Air Age

Workers in air transportation. The pictures on these two pages tell of flight—the latest advance that man has made in transportation. In one picture, a plane carrying more than 50 people has just arrived. Some passengers are getting off, while others wait to board the plane. In the other picture, a plane is being loaded with sacks of mail and express packages. Within an hour it may be unloading part of its cargo in another city one or two hundred miles away.

Many workers are required to operate an airline. Everyone knows of the pilots, copilots, and stewardesses who act as captain and crew of the airliner in flight. But there are many other airline employees who are less well known but are just as important. In fact, for every pilot, our airlines employ about thirty other workers.

Some of these other workers are ticket agents, secretaries, typists, or bookkeepers. Some are cargo handlers like the two men shown in Figure 208. Highly-skilled mechanics are employed to inspect the planes at frequent intervals, particularly such parts as the engines and radio, and make necessary repairs. Meteorologists are needed to study the weather, so that the pilot of each plane may have accurate information about the weather conditions he will meet on his flight. A flight superintendent works with the pilot in making the flight plan, that is, the route, altitude, and so on to be followed by the plane. Radio operators are needed, because landings and take-offs are directed by radio. Also, radio beacons or beams guide the planes through the air, and all communication with planes in flight, of course, is carried on by radio. Air transportation depends on the efficiency and good judgment of many different workers.

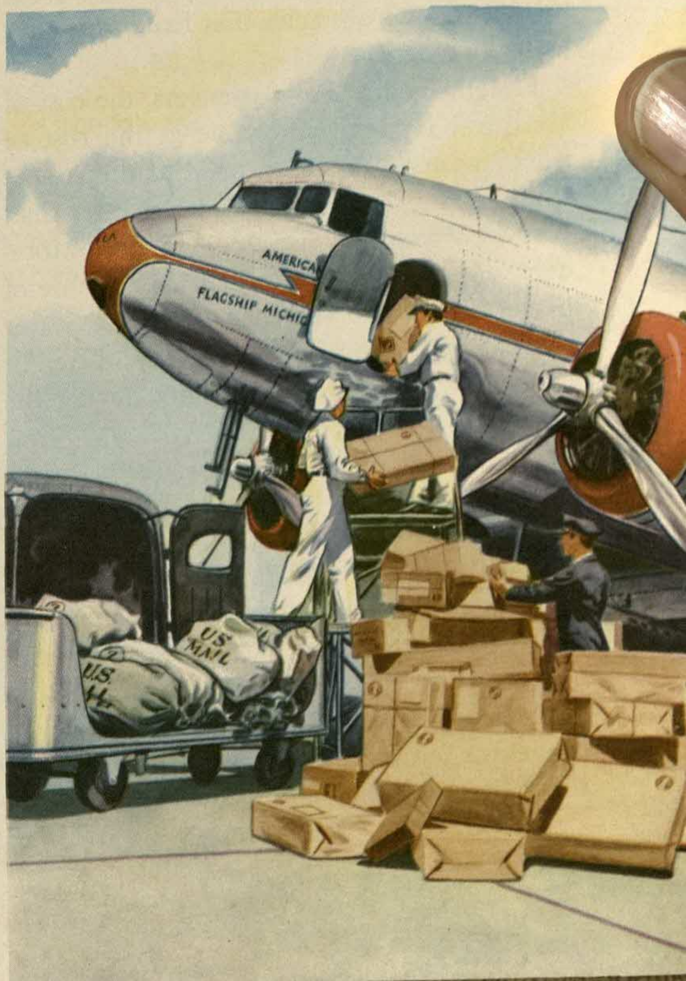
Why fly? Immediately after airplanes take off from the airport in Chicago, bound for New York, they pass directly over a network of railroad tracks. On these tracks, there may be trains on their way to New York. On the highways near the tracks, there may be buses and trucks headed for New York. Why, then, do passengers and goods often move by plane rather than by other means?

In this case, speed is the answer. By bus or truck, it takes about 28 hours or more to go from Chicago to New York. By fast train, it is a 16-hour trip. But a non-stop plane may cover the distance in three hours or less.

In some other parts of the world, there is another answer. Airplanes are used because they can fly over the barriers of mountains, deserts, swamps, or dense forests, reaching places that have no good connections by rail-

Figure 208. Express and mail by air

From photo by American Airlines



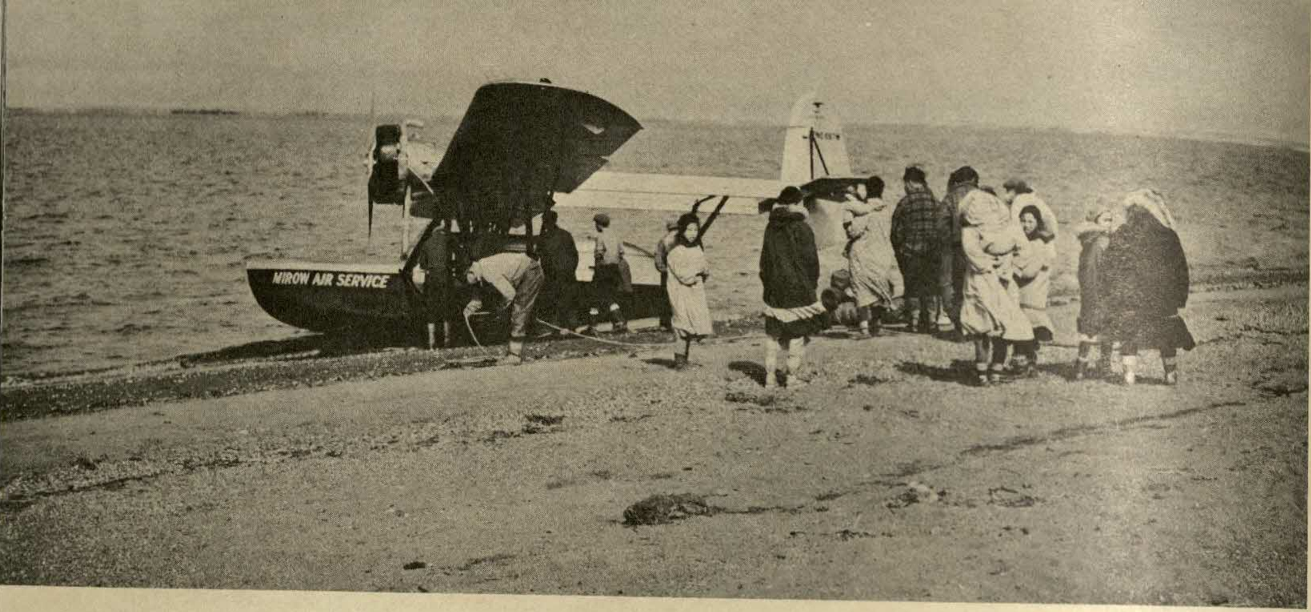


Figure 209. Air service in Alaska

© *European*

road, highway, or boat with the outside world. The picture above illustrates this. The plane has landed near the beach in front of an Eskimo village in Alaska. It brought medicines and other goods. It may carry back with it a cargo of valuable furs.

Men use airplanes, then, chiefly because they are fast, and because they can overcome certain natural obstacles that handicap other forms of travel.

Freight by air. For passengers, the cost of air travel is about the same as the cost of traveling first-class by train. But the cost of shipping freight by air is much greater than the cost of overland or water shipment. Moreover, air routes do not reach a multitude of places which are served by land or water routes. Why, then, has the amount of freight carried by air increased rapidly during the last few years?

Part of the answer, like the answer to the question "Why fly?" is speed. Suppose a machine in a New York factory is not able to run because of a broken part. A new part must come from a factory in Chicago. Since the breakdown of the machine may be costing the New York manufacturer hundreds of dollars a day, he will not hesitate to spend the extra ten or twenty dollars necessary for air transportation.

This example is an extreme case—emergency transportation. But many shippers are willing to spend a little extra to save time in transit.

Often, too, perishable goods are shipped by air. A sportsman may fly home a salmon caught in a famous stream in Newfoundland. At dinner in St. Louis, a diner may order fresh lobster tails flown in from the coast of Africa. A plane passenger, hearing a constant peeping from the baggage compartment, may glimpse a shipment of baby chicks when the compartment door is opened. To the shippers of such cargoes, speed is often more important than the added cost.

Another part of the answer lies in the plane's ability to fly to remote places. For example, an airline in Central America may carry mules or pianos, jeeps or home lighting plants to isolated communities that trucks, boats, or trains do not reach.

The world's air routes. Though air transportation is comparatively new, there already is a network of air routes circling the globe. The more important of these routes are shown on the map on page 379.

Air routes are different from all others in that they reach across land and sea alike. Nevertheless, the pattern on the air routes map resembles the patterns on some other maps. For example, the closest networks of air routes over land are in the United States and in western Europe, where there also are the most railroads and highways (pp. 388-389). The chief trans-ocean air routes join the United States and Europe, much as do the chief ocean-shipping routes (p. 378). Both air routes and ocean routes follow close to the coast of Asia, from Europe to Pakistan, India, Singapore, China, and Japan. Air routes link South America with other continents.

These similarities suggest the fact that air routes, like ocean routes, grow in response to need. Planes, like ships, go where there is traffic, in passengers or freight. As you can see by the population map on pages 370-371, the network of air routes follows closely the pattern of dense population, where one naturally would expect most business.

Airplanes, as you have seen, can disregard the barriers on the surface of the earth. An air route, therefore, may be the shortest possible distance between two points. This is known as a great circle route. The map on page 379 shows, however, that airplanes do not always choose routes that are the shortest possible in miles, for airplanes need places to refuel, and to get repairs, if necessary. For example, some airplanes could fly directly from San Francisco to Australia, but they do not. By going a short distance out of their way they have the advantage of stops in the Hawaiian Islands, and in the Fiji Islands. This far outweighs the slight extra distance, even if they should get no traffic in the islands.

The need for stopping places along various air routes has brought a new importance to some places which otherwise would be almost insignificant. Consider the bleak bit of rock in the Atlantic, called Ascension Island, and Wake Island in the Pacific, and the interior city called Kano, in Africa (map, p. 379). The air age has given these places a new and valuable resource in their location.

Who owns the air? As soon as air routes began to reach from nation to nation and continent to continent, the question of the ownership of the air came up. Does a nation own the air above it, as it owns the land? Or is the "air ocean" of the world something that belongs to all the people of the world?

Much has been written about freedom of the seas, which means that the ships of any nation are free to sail almost anywhere they wish. Should there be a similar freedom of the air, which would permit planes to fly anywhere, regardless of whose land is below?

So far, the nations of the world have considered the air to be the property of the nation that owns the land below. It is somewhat as if a nation's boundary lines were extended like invisible walls far into the sky. Each nation has its own set of restrictions, saying who may fly and how many may fly over its land. Perhaps that is necessary, particularly so long as some nations fear the planes of some other nations. Nevertheless, air transportation has been held back somewhat, because the air has been considered the property exclusively of the nation below.

Working Together

Although the various types of transportation have been described separately, they do not actually operate that way. In all major countries nearly all types are present, making a complex interrelated network. Goods or passengers may shift from one type of transport to another several times during a single journey.

Suppose a business man living in a community 30 miles from Chicago wishes to fly to New York. He may drive to the local railway station and take an electric or steam train to Chicago. From the station in Chicago he can take a bus, streetcar, or taxi to the airport. He then flies to New York and there uses bus or taxi service to get to the "air terminal" in the center of the city. From this terminal he may again use bus, taxi, electrically driven subway or suburban train, elevated train, or

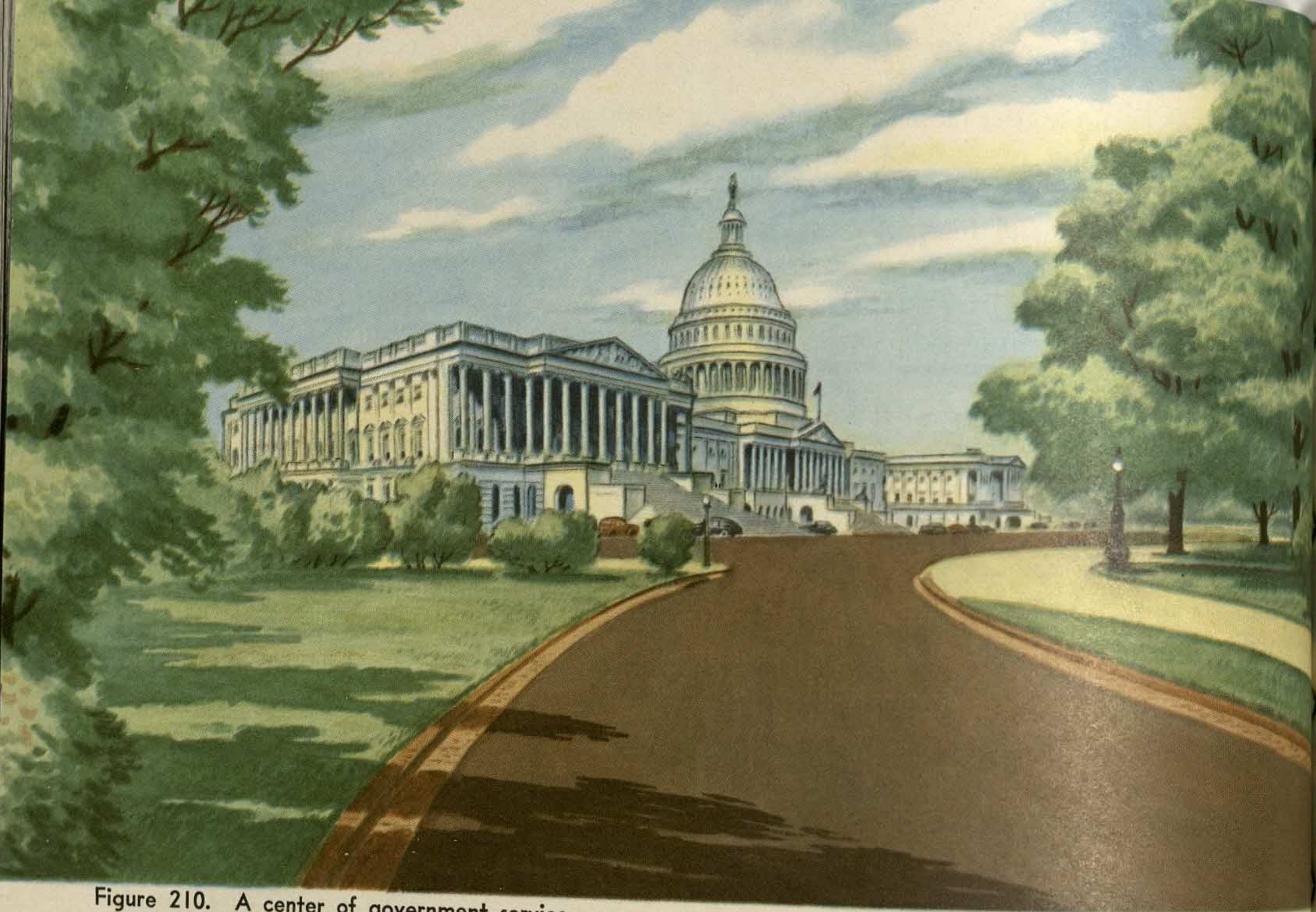


Figure 210. A center of government service

Figure 211. Service for travelers

From photo by author

steam train to his destination somewhere within the New York urban area.

All the various transportation workers therefore work together. In every community, except the very smallest, there are people who make a living from transportation. Each worker has a part in maintaining the world-wide network of transportation—a vital link for all the people. Our modern way of living could not exist without these transportation workers and the dependable service which they provide.

Helps in Learning

1. What airport is nearest your home? Try to find out what airline or airlines serve this airport, and what their routes are.

2. Is air transportation affected more by the weather than railway transportation? Why do you think so?

3. Business men travel by air frequently. Use an example to illustrate the value of air transport to a business man.

4. Give an example of a product, not named in this section, which might in some cases be shipped by air freight. Do you think, for example, that certain kinds of foods or medicines might be shipped by air freight? Why?

5. Find on the map, page 379, a part of the world where you think the airplane is used partly because there is little good transportation of other kinds.

6. Plan a vacation trip either to Los Angeles or to Washington, D. C. (Map pp. 230-231) You might plan to make at least a part of your trip by plane. (Map p. 379) What different kinds of transportation might you use in getting from your home to the hotel in which you plan to stay?

7. Think of the different kinds of transportation workers whom you have seen at work. Explain how each of these workers plays a part in maintaining the world-wide network of transportation.

The Special Services

Where are they going? It is a common sight in the city to see thousands of people on their way to work in the morning. They pour out of the trains, streetcars, and buses, and perhaps line up for other trains, streetcars, and buses. They dash across the streets, scarcely waiting for the lights to change, or watching to see if the way is clear. Many look anxiously at their watches, worrying about whether or not they are late. Rush, hurry, crowding, confusion—that is the picture of every week-day morning in many a city.

Where are these people going? If it is a typical American city of medium size, 37 out of every 100 workers are on their way to factories. About 17 are going to the shops and stores where the activity is trade. Perhaps 11 will put in the day at the work of transportation. Nearly all the rest are in the vast group called special service workers, which includes approximately one-fourth of all the workers in the country, and nearly one-third of those who live in the average medium-sized city.

The pictures on page 202 suggest two very different kinds of special services, government work and hotel service. The upper picture of course is the national Capitol at Washington, D. C. The lower picture shows a street in a small city in Florida, through which thousands of tourists pass during the winter season. Some of the signs advertise places where travelers can stay overnight.

Other special service workers include teachers, doctors, reporters, barbers, actors, funeral directors, lawyers and dozens of others. You read of some of these in Bedford (p. 9).

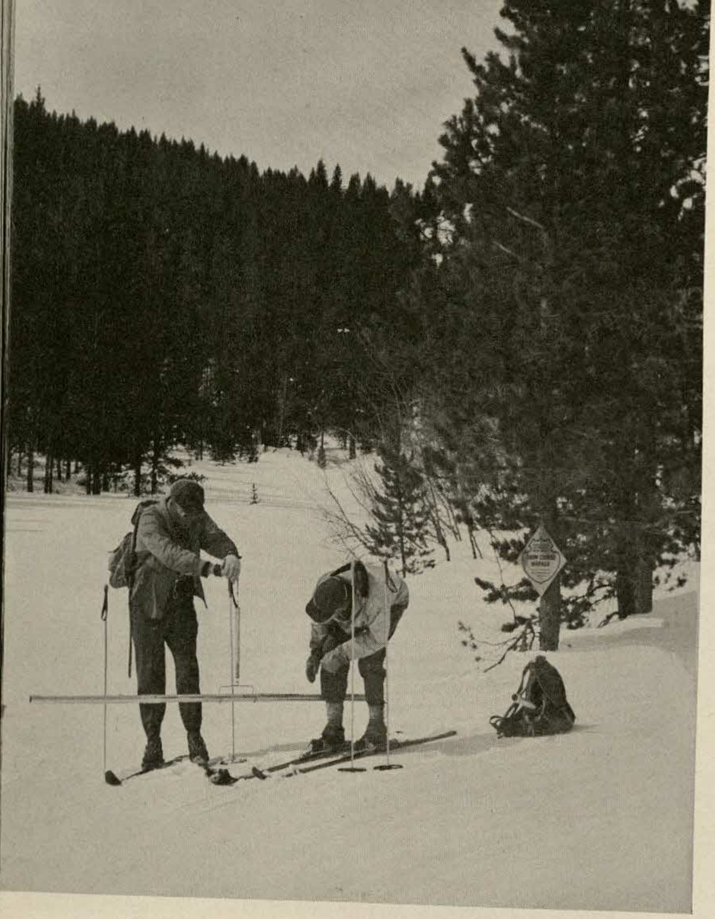


Figure 212. Snow survey *Soil Conservation Service*

It is neither possible nor important to list every service that these workers render in all the towns and cities of the world. It is more useful to understand how such workers fit into the urban life of a country, and to learn what are the outstanding *types* of work they do. As you will see, each of these workers has an essential task in the total life of the community. And the outstanding types of work are concerned with government, education, health, religion, communications, recreation, and other personal and business services.

Government

Affecting all people. Every person in the world is concerned with government. It may be a simple government as among the Sakai (pp. 31-32), where one of the older men decides where the group shall make camp. It may be an exceedingly complex government, like that of the United States. Whatever the form, government is the framework within which all people live and work.

There are many examples of the fact that each worker in the United States is directly affected by the government. People in government service decide which living things in the air, on the land, and in the water may be hunted, trapped, or fished, how many may be taken, in what ways, and at what times. Meat can be sold for food only if a government inspector stamps the meat to show that it is satisfactory. Many new methods of farming have been developed by government experts. The prices which farmers get for their crops are determined in part by the government.

The picture on this page shows two government workers called "snow surveyors," who climb into the high mountains of the West each winter to measure the depth of the snow. Knowing this, the farmers can tell how much water there will be the following summer, after the snow has melted and the water has flowed down into the valleys. Farmers will plan their crops accordingly.

Millions of acres of forests are protected from fire by government workers (pp. 134-135), and many loggers work in forests belonging to the government. The government helps protect the safety of miners, and encourages the development of new mineral resources.

The health, comfort, and safety of factory, store, and office workers have been greatly improved by government regulations. Standards of trade and the rates for shipping goods from state to state are fixed by government consent.

You know of the government workers in your own community, who provide police and fire protection, who gather in council meetings to make local laws, who judge whether or not the laws have been violated, and so on. There are workers who have similar duties in the county, state and national governments. In foreign lands, the American people are represented by consuls and ambassadors, who also are government workers.

American soldiers, sailors, and airmen are workers who help protect our country.

This may seem to be a long list of ways in which our government affects us, who in turn create the kind of government we want. Yet it is scarcely a beginning. Multiply these activities many times over, and only then will you begin to see the enormous importance of the work of government.

Why is government necessary? Government is necessary in every organized group or society because the members of the group want and need many services which can be provided only by the group as a whole. It would be too expensive for an individual to hire his own private policeman to protect himself and his family. Furthermore, the authority of this private policeman might not be respected by others. There would be little use for a man to pave the street in front of his own house. He wants paved streets and highways everywhere so that he can drive his automobile wherever he wants to go. And so it is with countless other services which can be provided better and much more economically by the people acting together, as a group, through government.

Government services are paid for through taxes of many kinds. Real estate taxes, income taxes, sales taxes, and luxury taxes are among the important kinds of taxes through which money is raised to pay for the special services of government.

It is important that government be strong enough to protect the people adequately. It is also important that the government carry on its many activities efficiently and economically.

It is of the utmost importance that the system of government leave the control of the government to the people themselves. That is why our important officials are elected for a limited and definite period of time. Over the centuries men have learned that they must understand how government works and that they must play their part in it. Otherwise men who are not concerned about the interests of the people as a whole may take over the government and run it in their own interests.

Education

Helping people learn. Two out of every 100 people you may see going to work in the morning in the typical, medium-sized city are teachers in schools, colleges, and universities.

This suggests only a little of the tremendous importance of education to every person and to all the people of a country. Through education we learn what people have done in the past, how they have learned to live together, how they learned little by little to use the great natural resources of the world in new and better ways, and how they have created tools to do their work in easier and more efficient ways. We learn about the progress men have made in conquering disease and preventing ill health. We learn to use the essential skills of communication which have developed slowly over thousands of years.

Because of the great gift of written and spoken language we can draw upon the experience and knowledge of others. We can take what has been learned and go on from there. We can discover the good things that other peoples of the world today can contribute to our own way of living. But we can do these things only if the opportunity to educate ourselves is provided and if we take advantage of it.

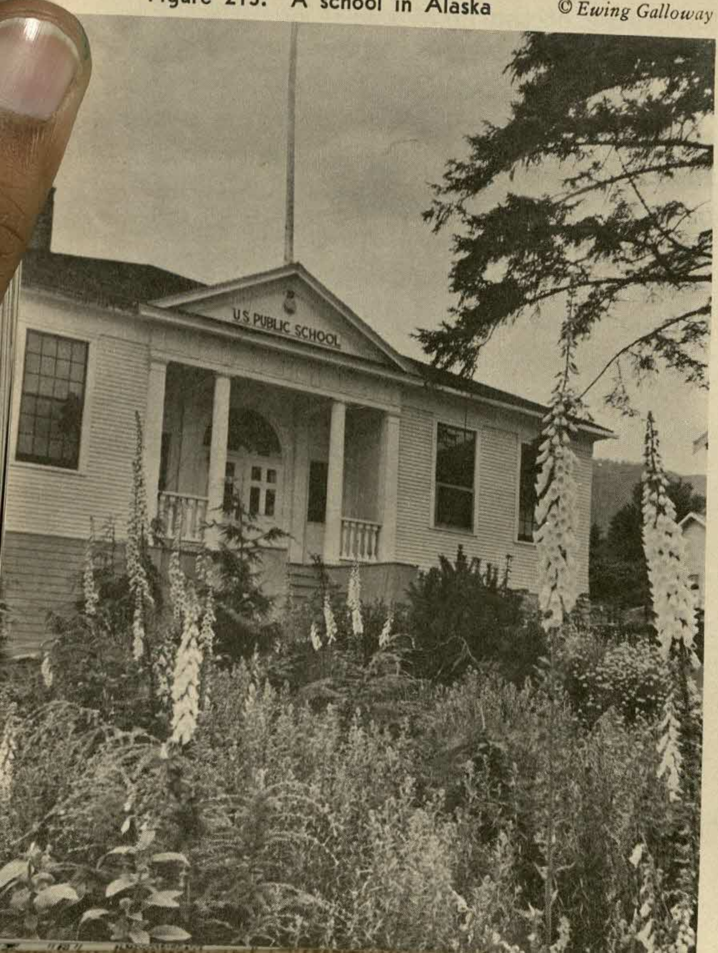
The picture at the bottom of page 206 shows one of thousands of places where the work of education goes on. This school is in Sitka, Alaska. Most of the pupils are Indians. This illustrates the fact that Americans believe that education should reach every group of people, in even the most remote areas.

Literacy and illiteracy. It is impossible to measure exactly how well educated an individual is. One person may have spent many years in school and yet fail to understand the world about him. Another person might spend only a few years in school, and yet become well educated if he continues to study and is alert to the world about him.

There are facts about people, however, which help us to measure how well they are educated. Perhaps the simplest measuring stick is literacy. A person who is literate can read and write. The illiterate person cannot read and write. And in general we may take for granted that literate people are better educated than those who are illiterate.

The map on pages 392-393 shows how the countries of the world compare in literacy. The differences are amazing. In the United States and Canada, nearly all people can read and write. In Mexico next door, scarcely half are literate. Except for Argentina and little Costa Rica, the level of literacy is low in most of Latin America. In Japan, Russia, and in most countries of western Europe, the standard of literacy is fairly high. To the south of these countries the map shows a broad belt, reaching all the way across Africa and Asia, where the level of literacy is low. Only in far off Australia and New Zealand does the picture change again to one which suggests good education.

Figure 213. A school in Alaska © *Ewing Galloway*



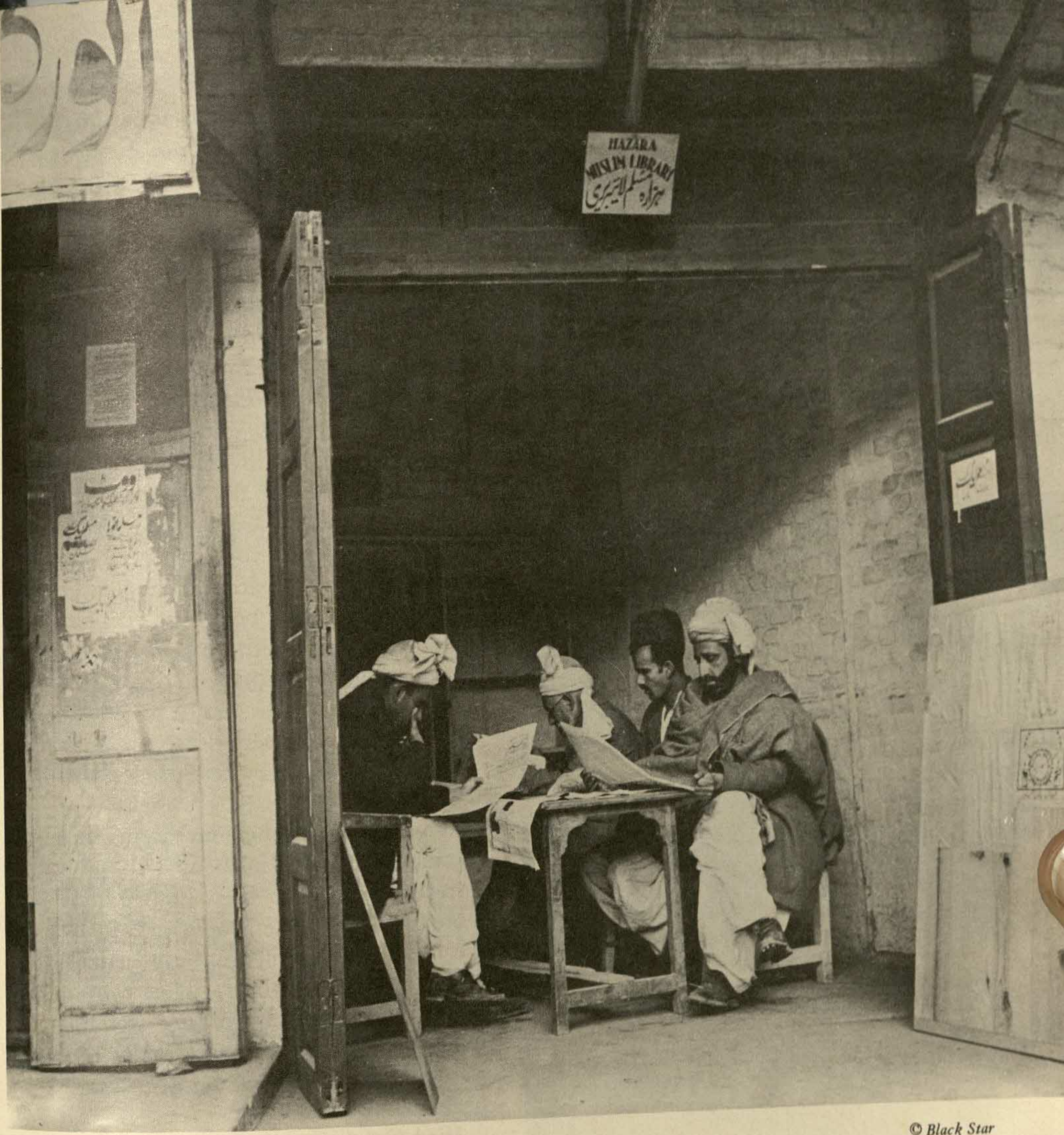
The picture on page 207 was taken in southern Asia where education has made little headway (pp. 392-393). The men have stopped at a little "library," whose doors open to the sidewalk. These men are among the fortunate few in these lands who can read and write. Even then they have few opportunities many other peoples enjoy. Good libraries are few, so although the men are literate, they do not have access to many good books to read.

Obstacles. There are real obstacles to education in many lands, obstacles which help to explain what is shown on the literacy map. The tradition of the people may be *against* literacy. Though it seems strange to us, some nations have not accepted the ideal of education for all the people. In some countries people believe in education for boys and not for girls.

In some instances there is a money problem. Many families are so poor that even the smaller children must work in the fields and help the family make a living. A child who is only six or seven years old can help to herd the goats, for example, can pull weeds, or gather sticks for fuel.

Furthermore, the community itself may not have money with which to build even a simple school building, hire a teacher, or buy a few books, pencils, and paper. And the national government of the land may not be interested in helping or may not be able to help.

What is being done. In spite of these and other obstacles, some battles for literacy and for education are being won. If a map of literacy had been drawn for the year the United States became an independent nation (1776), it would have shown that a large per cent of our people could not read and write. That situation has changed greatly. In other parts of the world, too, there has been progress.

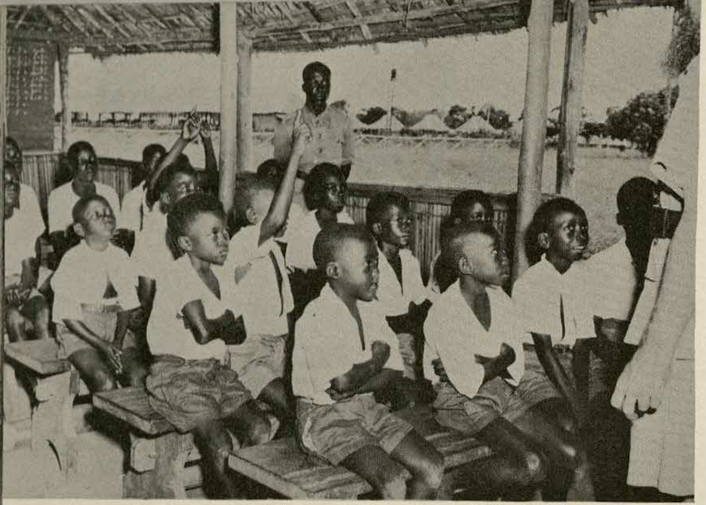


© Black Star

Figure 214. A library in southern Asia

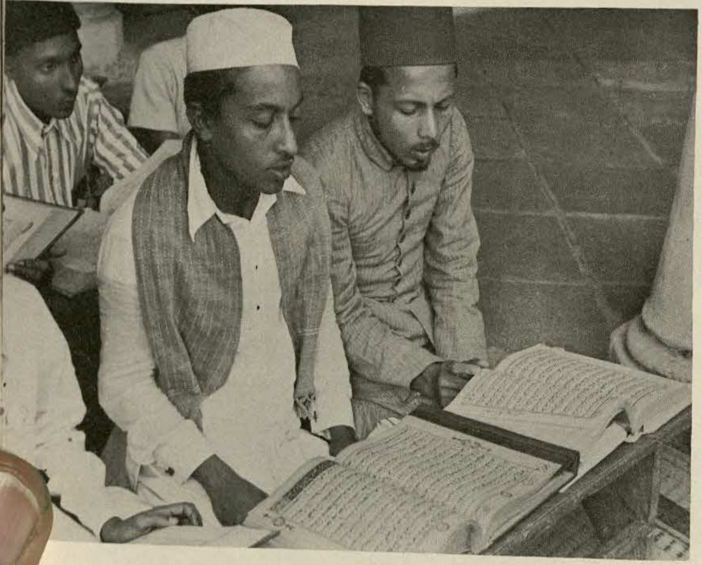
In Africa and in many parts of Asia, missionaries took the lead in establishing schools. The local governments soon followed with schools of their own. The picture at the top of page 208 may well have been taken in a mission school in the Belgian Congo (p. 390). In that warm climate, walls, such as our school buildings have, are not necessary. The furnishings in this schoolroom in the Congo are simple, but the pupils appear eager to take advantage of an opportunity for education. So far this opportunity has come to few in their country.

The picture in the middle of page 208 (Fig. 216) was taken in a university in southern Asia. The young men are reading books printed in an alphabet strange to us but familiar to them. The number of young people who have a chance to attend such a college or university is small indeed,



Belgian Government Information Bureau

Figure 215. A boys' school in Africa

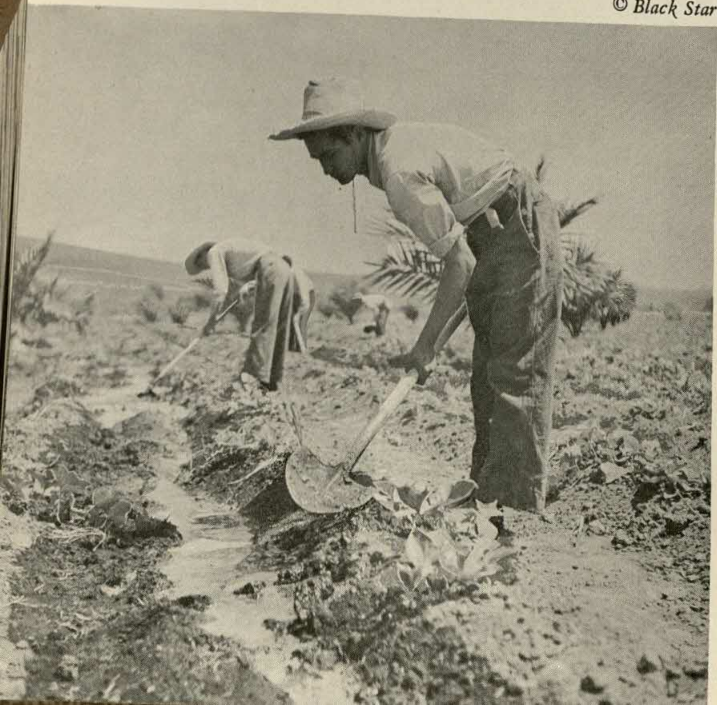


© Ewing Galloway

Figure 216. University students in Asia

Figure 217. A new kind of school in the New World

© Black Star



in most of Asia. But that number increases a little each year, which is another victory for education.

The third picture was taken in Honduras, a small country in Central America (p. 382). The boys are attending an agricultural school. There, in addition to such subjects as history, language, and geography, they study how to use their land to the best advantage. They want it to produce larger and better crops which can be sold for more money, which in turn will provide better schools and other good things for all the people. The boy in the foreground is learning how to dig an irrigation ditch, and to grow sweet potatoes with the help of irrigation. The small tree almost hidden by the boy is an oil palm tree. This is a new crop with which the school is experimenting. This kind of education is now going on in many parts of the world. It holds great promise for better use of natural resources in those lands where progress has been slow.

What remains to be done. Much has been accomplished, then, in the work of education in recent times. But it is a startling fact that more than half of the people on the earth still are illiterate, shut off from all the organized knowledge of the world. They cannot read of the new ways of working which would help them produce more, or of the new ways of living which would give them better health.

We have read earlier about the importance of understanding government. But only people who are educated can understand or create the kind of government which is necessary in the complex world of today. And only those who have learned about government, through long study and hard thinking, can govern themselves wisely. This is another reason why the problem of educating all the peoples of the world is an urgent one.

The tasks which face the world's teachers, then, are enormous. But it is important that they keep at their work. For literacy and education are essential keys to the better world that all the earth's peoples want.

Helps in Learning

1. How does the picture at the bottom of page 202 suggest that the tourist business is a big business in Florida?

What things shown in this picture suggest much warm weather and winters that are not severely cold?

2. How does the January temperature map (pp. 374-375) help to explain why many tourists visit Florida in the winter?

How do the maps on pages 379 and 230-231 help to explain why it is possible for many thousands of people to visit Florida each year?

3. Have you ever stayed in a hotel or in a "motel," or tourist court? If so, think of the different special services that were needed to make your stay comfortable. How many can you name?

Did you remember to include laundry service for the sheets and towels which you used?

4. As you have learned, the kind of government which people have goes far in explaining their opportunities and activities.

For example, how does the kind of government *we* have help to explain why you are in school, and not working full time in a mine or factory?

5. In what ways do *you* benefit from the work of the following government workers: *government milk inspectors; water works employees; state highway police; Congressmen and Senators; ambassadors and consuls?*

6. The ability to read and write makes daily living easier in many ways. Suppose you were illiterate. What difficulties might you have in taking a bus to a strange neighborhood? using a telephone directory? depositing money in the bank? What other difficulties might you have?

7. Schools in our country now go far beyond teaching boys and girls how to read and write and use numbers. For example, from the study of geography you should expect to get an understanding of the world in which you live. This understanding should help you play a useful and intelligent part in the life of your community, in our country, and in the world.

Why is such an understanding important?

In what other ways do you think your education will be helpful to you?

Health

The world over, the problem of health is a crucial one. Even in the most advanced countries many people suffer needlessly from lack of medical care or lack of knowledge about health. Illness which could be prevented results in the loss of much productive labor. People do not live as long as they might if they had better medical care or more knowledge of sound health practices. The work of those special service workers who are directly concerned with medical care is therefore of the greatest importance.

A world picture. In the different countries of the world the contrasts are as great in medical service as in education. In the United States and the countries of western Europe, we may assume that practically everyone knows about some doctor who lives in his own or a neighboring community. In time of illness the doctor is called. This is not true, however, in most communities of the world.

Most of the earth's people have never seen a doctor, and many would be afraid to let a doctor try to help them. Because of tradition, they may prefer the services of a so-called witch doctor, who chants and dances and tries to work magic while the patient suffers. It is perhaps more common that the sick depend on such home remedies as they have learned about from their parents and grandparents.

If one could make a map showing comparative health standards and the amount of medical aid available, the pattern would be much like that of illiteracy. The "lands of darkness" again would be in a broad belt reaching across the tropical parts of the Americas, across Africa and southern Asia. Ignorance and poor health seem to go to-

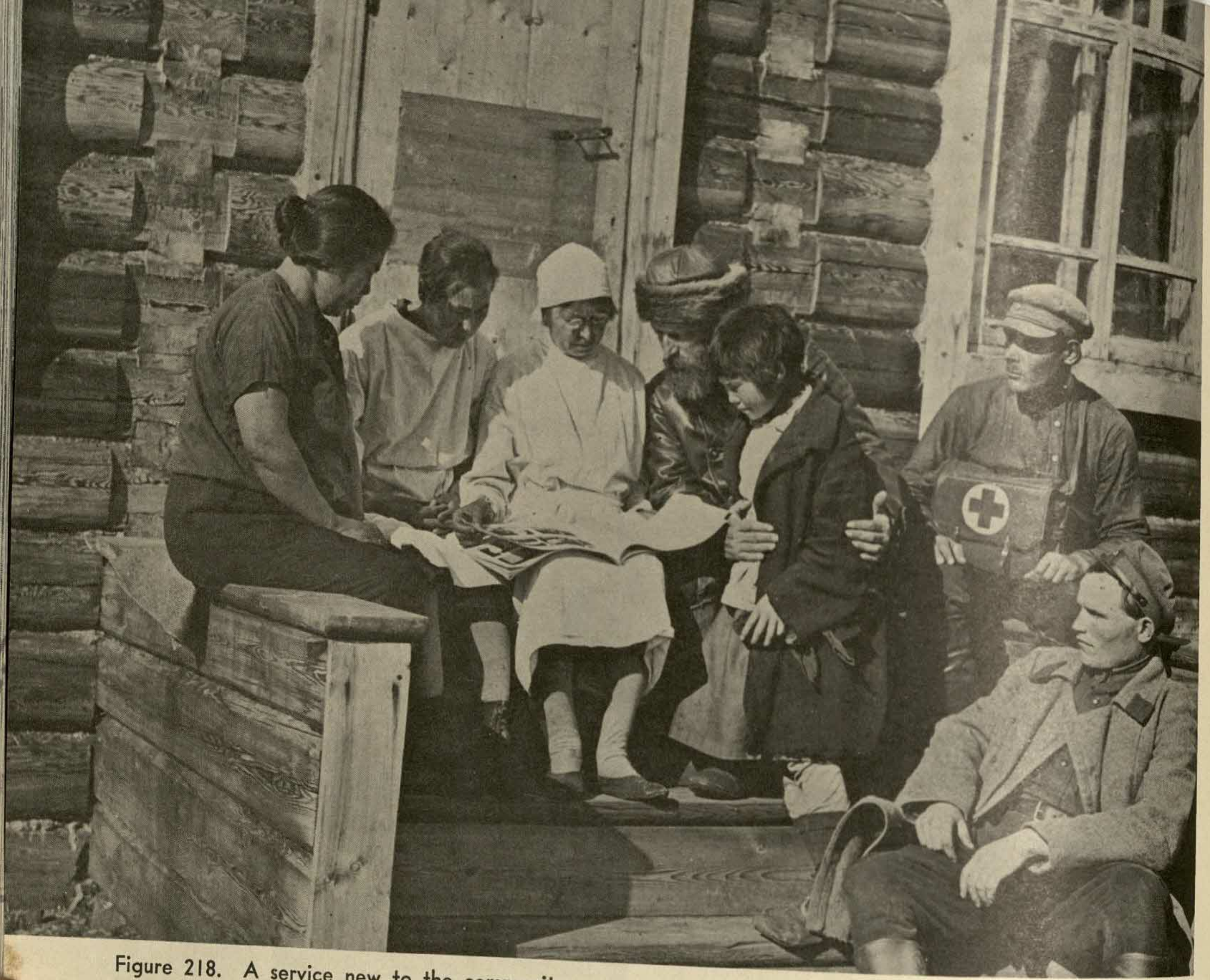


Figure 218. A service new to the community

© Julien Bryan

gether. Certain it is that many people suffer needlessly, not yet having learned, for example, to avoid drinking water which may be filled with germs, or to protect themselves against mosquitoes that carry dangerous diseases. Without either doctors or books, the precious information that they need never reaches them.

Progress. The picture above is a report of progress. It was taken in a forest community north of Lake Baikal, in Siberia (pp. 386-387). The building is a frontier hospital, made of logs. A few years before the picture was taken, the local inhabitants knew nothing of modern medicine. Now they come confidently to the nurse, or the physician, when they need medical aid. This is but one example of what is being done and needs to be done in order to bring about better standards of health.

Again the problem is a broad one. More doctors, nurses, clinics, and hospitals are needed. More education in good health practices is also essential. In many cases the general standard of living is so low that health is endangered. So, while the contribution of these special service workers in health is a vital one, solving the problem of health will require the help of everyone.

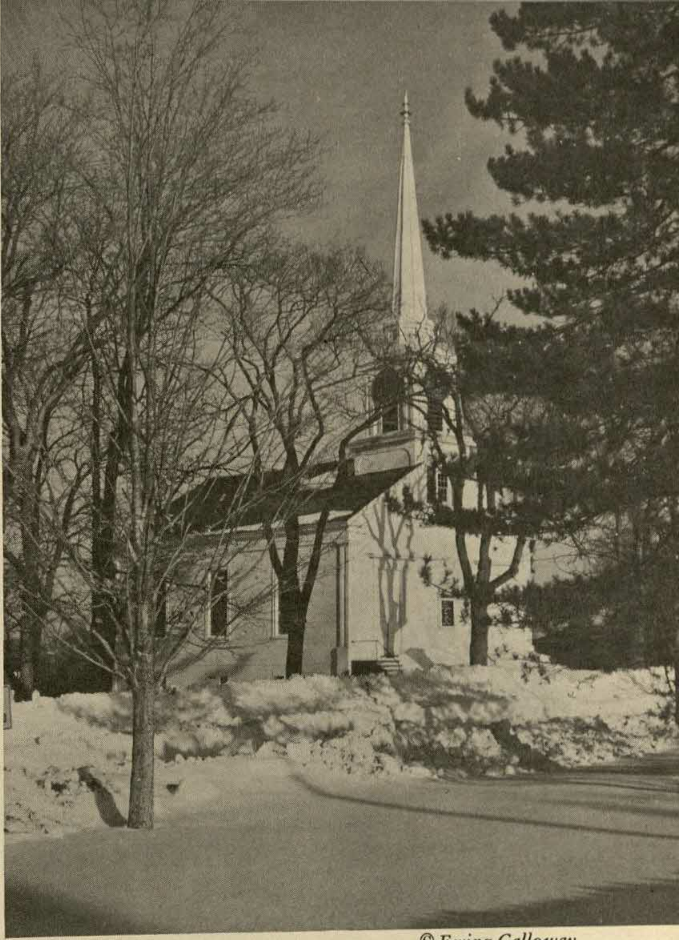
Religion

As far back as we know anything about people, there has been religion. We know also that for thousands of years there have been religious leaders. In practically every community in the world today there are leaders and workers in religion. While you may not often think of them as such, these people are special service workers.

The work of these people may make a great difference in a community, for religion itself makes a difference. It sets standards of conduct by which people live. It encourages people to be law-abiding citizens. Because of religious faith one group of people may patiently endure hardship. Another group may be led by their religious faith to take bold action to gain greater freedom or to improve their living conditions. Thousands of people, for example, have come to the United States for either of these reasons.

All around the world today there are evidences of religious faith. This evidence may be only some carved statues, strangely shaped sticks, or colored stones. The beautiful buildings shown in the pictures on this page suggest the importance of religion in two very different parts of the world.

The upper picture shows a church in New Hampshire. The lower picture shows a Mohammedan mosque in Libya, North Africa. For one group of worshippers, Sunday is the holy day. For the other group, Friday is the special day for worship. Other religious groups have differently shaped buildings, or other days set aside for worship.

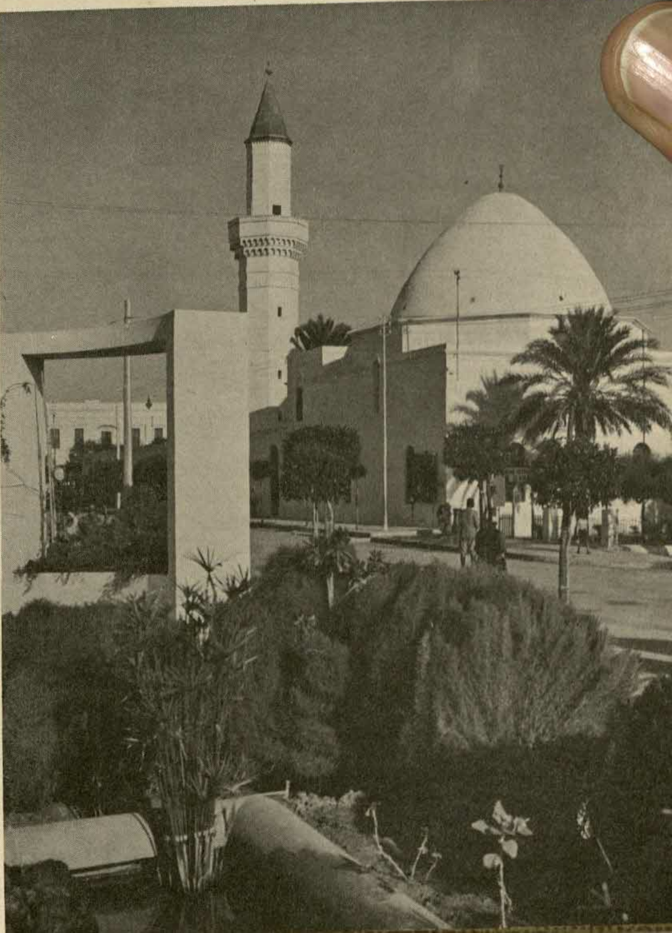


© *Ewing Galloway*

Figure 219. A place of worship in the United States

Figure 220. Where men worship in North Africa

© *Ewing Galloway*



Communications

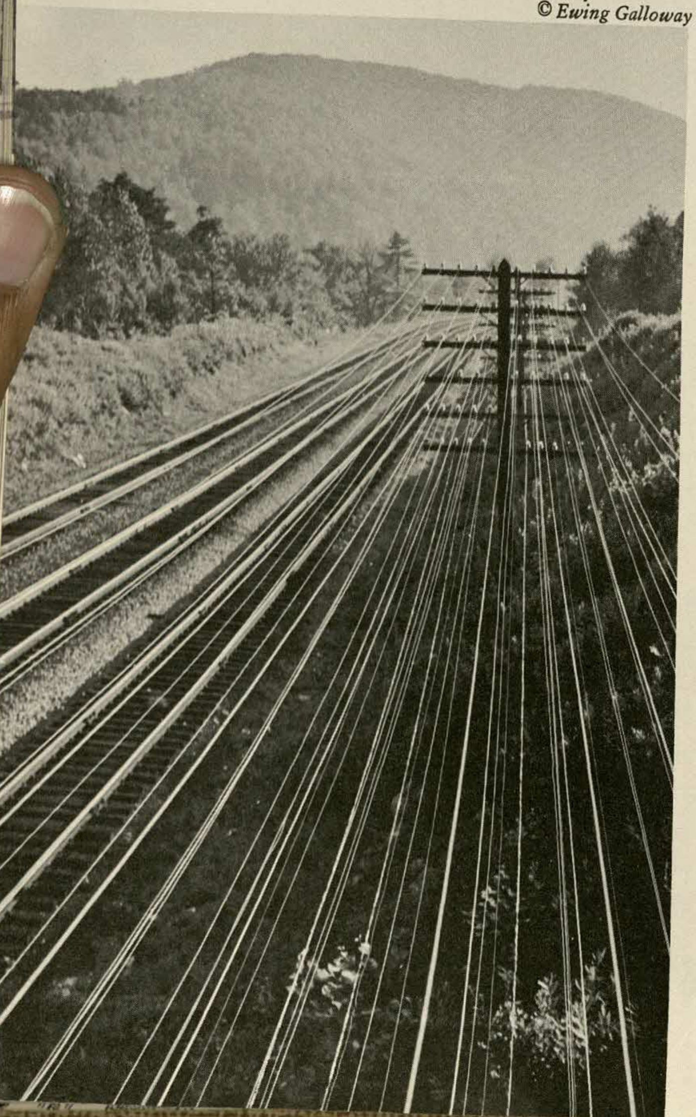
A storm reminds us. It sometimes takes a severe storm to remind us how much we depend on modern communications. We read of a severe windstorm or sleet storm that breaks thousands of wires like those in the picture on page 212. Telephone and telegraph service fails. Farmers cannot learn what happened a few miles away in their own community. A rancher cannot call a physician. The mail carrier cannot travel. Entire towns are cut off from normal contact with the outside world.

This is only an example of what would happen if all communications were shut off, by telephone, telegraph, and radio. Modern business as we know it would come to a halt. Government would become disorganized and ineffective. Public safety would be endangered. Appropriately, therefore, the lines of communication are often called the life lines of a nation.

In a sense the highways, waterways, railroads, and airways are also lines of communication, though they are more commonly known as lines of transportation, over which goods and people actually move from place to place. The communications workers here described are those who do not move with the messages that they send. The workers include telephone operators, telegraph operators, and radio and television technicians. Such people represent not more than two of each 100 workers that you may see going to work in the average American city.

Figure 221. Lines of communication today

© Ewing Galloway



New developments. The picture on page 213 was first published in a geographical magazine in 1833. What a striking difference there is between that picture and the one on this page. The contrast emphasizes how very new is our present system of communications. In 1833 neither the telephone, the radio, nor the modern telegraph system had been invented.

The following description of the so-called "telegraph" appeared with the picture in that magazine of 1833: "A telegraph is a contrivance by which news may be rapidly made known, by signals to a person, who is stationed at a distance." A simple contrivance of this sort consists of six shutters placed in a large frame. The different positions of these shutters "stand for the letters of the alphabet; and after a person has made himself well acquainted with them, he can easily read the letters as they succeed each other, and so make out a whole sentence. . . . In the little house, which you see, a man stays on watch, with a telescope in his hand, to distinguish what the telegraph on the hill beyond has to say. As soon as he finds this out, he moves . . . his telegraph so as to tell the same thing to a person who is stationed some distance behind him." The length of one telegraph line "is about twelve miles, and intelligence may be communicated through the line in two minutes."

Today the telegraph messages move like lightning, along wires from the Atlantic Coast to the Pacific Coast, or around the world, almost instantaneously. You can pick up your telephone, anywhere in the United States, and talk "long distance" to people in more than 60 different countries, in North America, South America, Europe, Africa, Asia, and Australia. By radio-telephone you can talk to ships at sea, and to automobiles along the

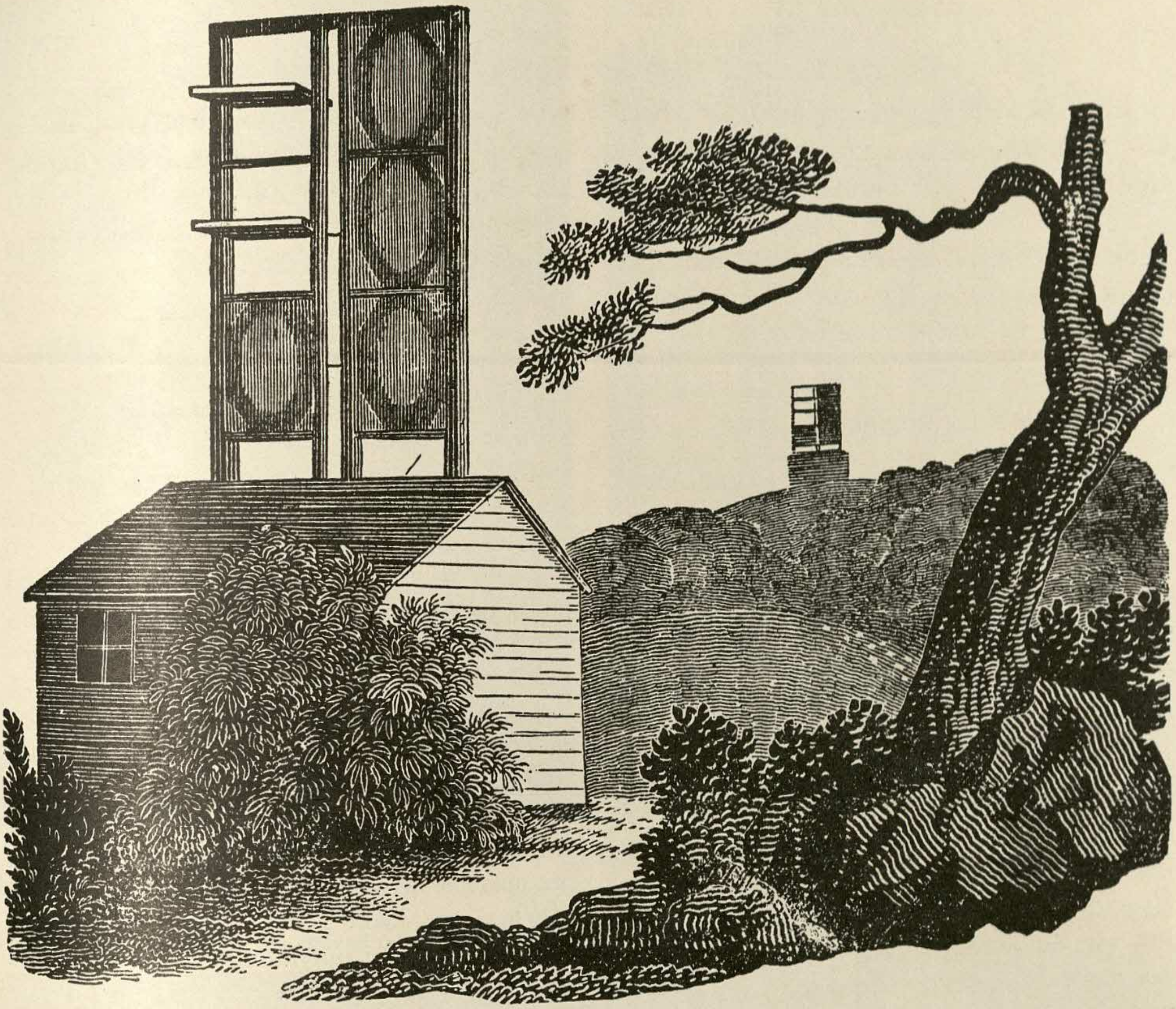


Figure 222. "The telegraph" in 1833

highway, if they have the necessary equipment. Television brings you a view of what is happening at the instant it happens. All these are new developments, some of the latest gifts of science and the Industrial Revolution.

Here and abroad. The figures which indicate the size of our communication systems are so large they can scarcely be appreciated. The United States has about 50 million telephones. There are more than 100 million radio sets in the country and also many millions of television sets. Americans complete more than 70 billion telephone conversations each year. The telephone wire in use in the nation would reach around the world at the equator more than 7,000 times.

The following figures show the number of people there are for each telephone in various countries in the world.

UNITED STATES	1 *telephone for every*	4 *persons*
CANADA	1 *telephone for every*	5 *persons*
SWITZERLAND	1 *telephone for every*	5 *persons*
DENMARK	1 *telephone for every*	6 *persons*
NORWAY	1 *telephone for every*	7 *persons*
AUSTRALIA	1 *telephone for every*	7 *persons*
BRITAIN	1 *telephone for every*	9 *persons*
FINLAND	1 *telephone for every*	12 *persons*
NETHERLANDS	1 *telephone for every*	13 *persons*
ARGENTINA	1 *telephone for every*	22 *persons*
UNION OF S. AFRICA	1 *telephone for every*	30 *persons*
YUGOSLAVIA	1 *telephone for every*	148 *persons*
PERU	1 *telephone for every*	189 *persons*
INDIA	1 *telephone for every*	2119 *persons*
INDONESIA	1 *telephone for every*	2140 *persons*

Though few individual persons in Asia, for example, have advantages of communication such as ours, the capitals and great cities of the world are all tied together in one great network of instantaneous communication.

More than a dozen ocean cables have been laid across the Atlantic Ocean. Hundreds of radio-telephone and radio-telegraph circuits are in operation connecting the world's cities. In this type of communication the telegraphic symbols and the voices are carried by short-wave radio instead of by wire.

Other Special Services

Almost endless. One could list hundreds of other special services, in the average American city, that might be added to those that have been described. One large group of workers performs personal services. These people work in laundries, beauty shops, and hotels, for example. Many of them are household workers. Other thousands of workers offer repair services for your radio, watch, shoes, lawn mower, or bicycle. Still others furnish the service of entertainment. These may be actors, magicians, musicians, and the like. Another half dozen kinds of workers include undertakers, auctioneers, interior decorators, engineers, surveyors, and artists.

This variety in special services is true of the entire world. Three very different kinds are shown on the opposite page. The man in Figure 223 is a Negro artist who lives in the Congo and renders the service of painting pictures of his own land. The picture in Figure 224 was taken in Egypt, where a tourist guide is showing some tourists a famous old temple. At the bottom of the page you can see people waiting in line to buy tickets to a movie in Tokyo, Japan. The building with the round front is the theater. The ushers and the motion picture operators are special service workers, as are the people who do the same work in your community.

We would expect to find many special service workers in areas where power and power-driven machines are used on the farms and in the factories—in general, where the Industrial Revolution has had the greatest effect. This is true because, with power and mass-production methods, fewer workers are required to produce the necessities of life—food, clothing, shelter. More people can give their time to providing special services, and more people can afford them.

Helps in Learning

1. Who are some of the special service workers that are directly concerned with medical aid in your community? Are any of the following in your list: public health officers, school nurse, visiting nurse, X-ray laboratory worker?

2. All over the world there are signs in the landscape that men feel a need for worship. What buildings in your community suggest this need?

3. "The lines of communication are often called the life lines of a nation." Explain what is meant by this statement.

4. Suppose you make a telephone call to a friend next door or down the road. *Where* is the operator who handles the call for you?

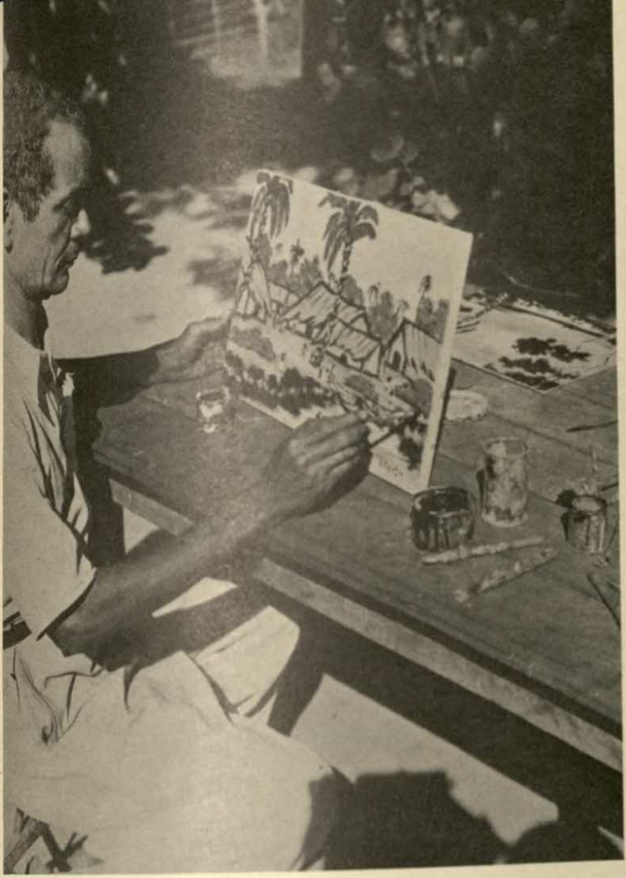
When you make a long distance telephone call, one or more operators outside your community may help put the call through for you. Find out from your local telephone company how a long distance call is routed from your community to a city at least a thousand miles away.

If your community has a dial system, find out where the main switchboard is, and what special service workers are needed there to keep the dial system working smoothly.

5. Suppose someone in New York or San Francisco sends you a telegram on your birthday. What special service workers help get that telegram to you?

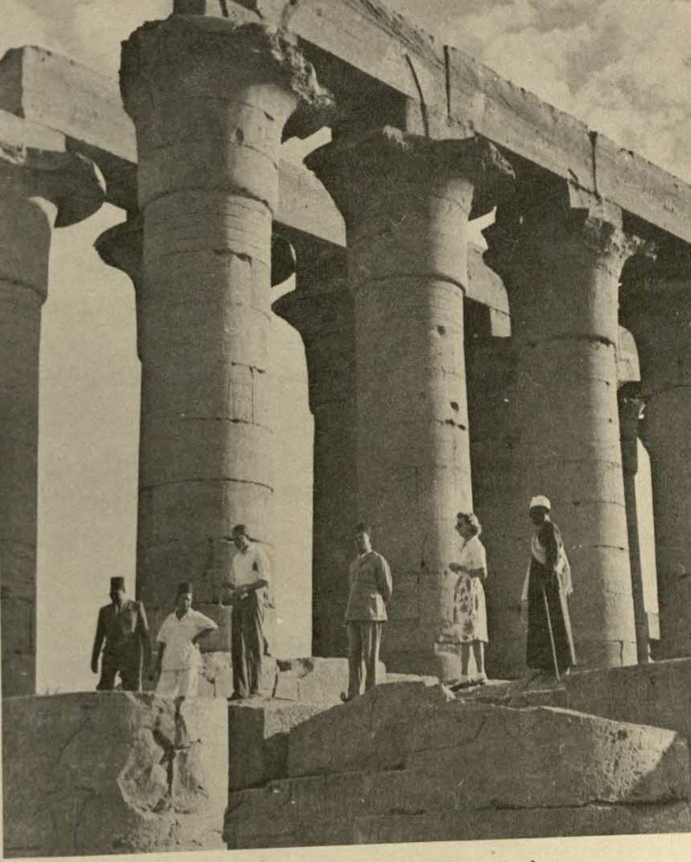
6. In most communities, telephone and telegraph wires are strung on poles. In many big cities, they are laid underground. Where are the wires in your community? Have you ever watched the telephone linemen at work? What did they do? Do you think such workers have a personal interest in the weather? Why?

7. Highways, waterways, railroads, and airways are commonly known as lines of *transportation*, but they are also lines of *communication*. Tell why.



Belgian Government Information Bureau

Figure 223. An artist in Africa

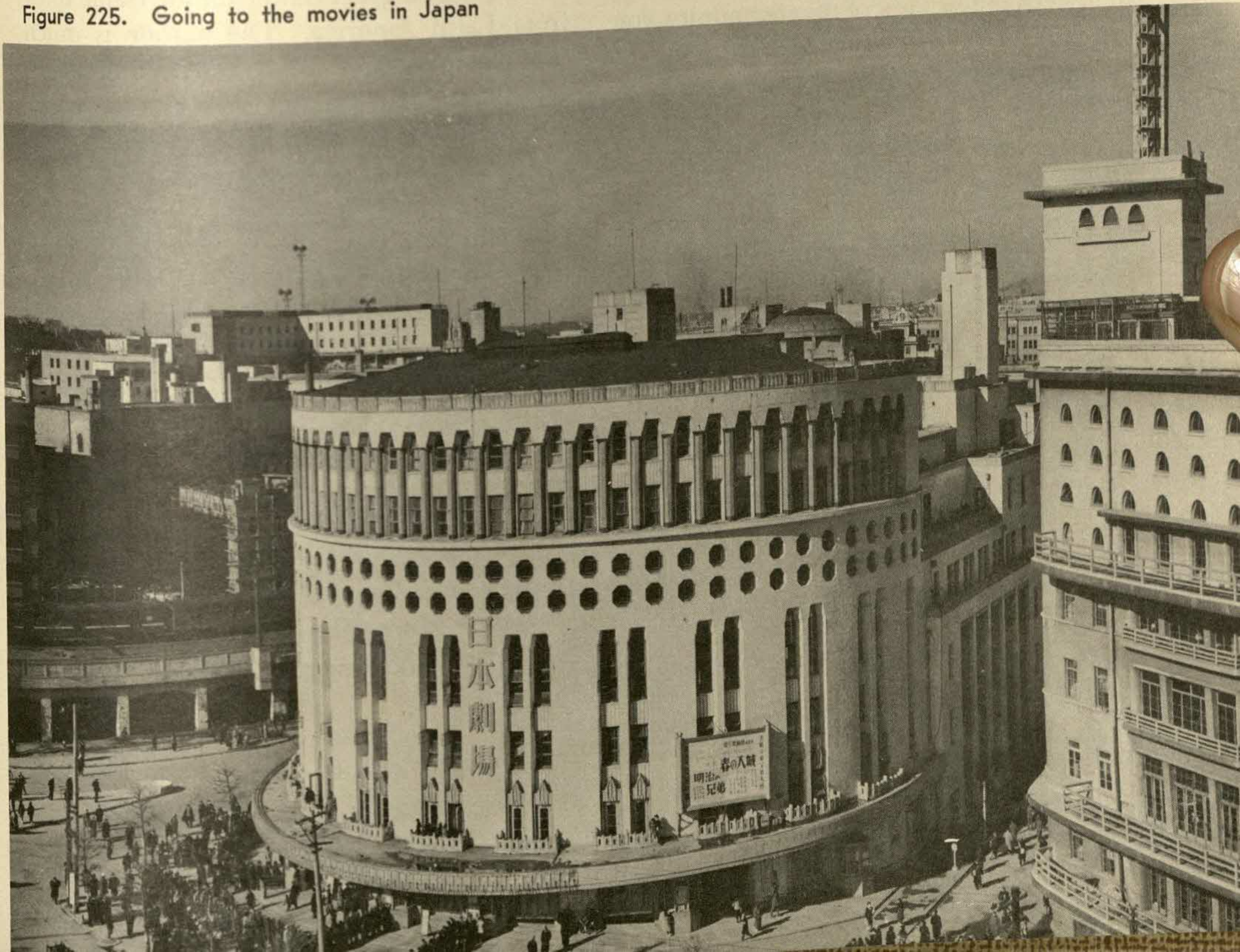


© Screen Traveler, from Gendreau

Figure 224. Guiding tourists

Figure 225. Going to the movies in Japan

© Ewing Galloway



How to Study a Town or City

Using a check list. These stories about manufacturing, trade, transportation, and special services help us understand what kinds of work are done in urban centers generally. And as we have seen, pages 162-163, cities differ greatly in their *work*. Other important differences, you will recall, are in *natural setting, size, history and people, streets and buildings,* and *connections*. If now you will put these items together, you will have a convenient check list to use in studying any town or city, much as you used a check list to help you study farms and farming (pp. 74-75).

The use of this check list will bring out many important facts about a particular town or city. However, you will not want to end your study when you have gathered the bare facts about size, work, and so on. If you want an understanding view of the community, you will seek to discover some of the reasons for the facts being as they are. You may learn, for instance, why a city has grown rapidly or slowly, or why people have chosen a particular type of work in the city.

The following brief notes about three southern cities show the value of using this check list. In a complete study of any one city you would add many more facts, as well as reasons, under each of the headings in the outline.

Miami, Florida. The picture in Figure 226 shows the heart of the city.

Natural setting. Miami is a seacoast city near the southern tip of Florida. Its mild winter climate is attractive to tourists, and is helpful to farmers who grow fruit and winter vegetables in the surrounding area.

Size. The population is nearly 250,000 in the city proper, and almost 500,000 in the Miami urban area. The winter tourist season brings tens of thousands of visitors here.

History and people. Miami is one of America's youngest cities. Fifty years ago it was little more than a village. The growth of the fruit and vegetable industry in Florida, and the winter tourist trade have been largely responsible for the growth of the city.

The people of Miami are much the same as those in other towns and cities of the region. The population also shows the influence of its location near Latin America.

Streets and buildings. Many streets are lined with palm trees, reflecting the climate. Many buildings, business and private, show the influence of Spanish-style architecture. There are some new, tall buildings in the central business district (Fig. 226).

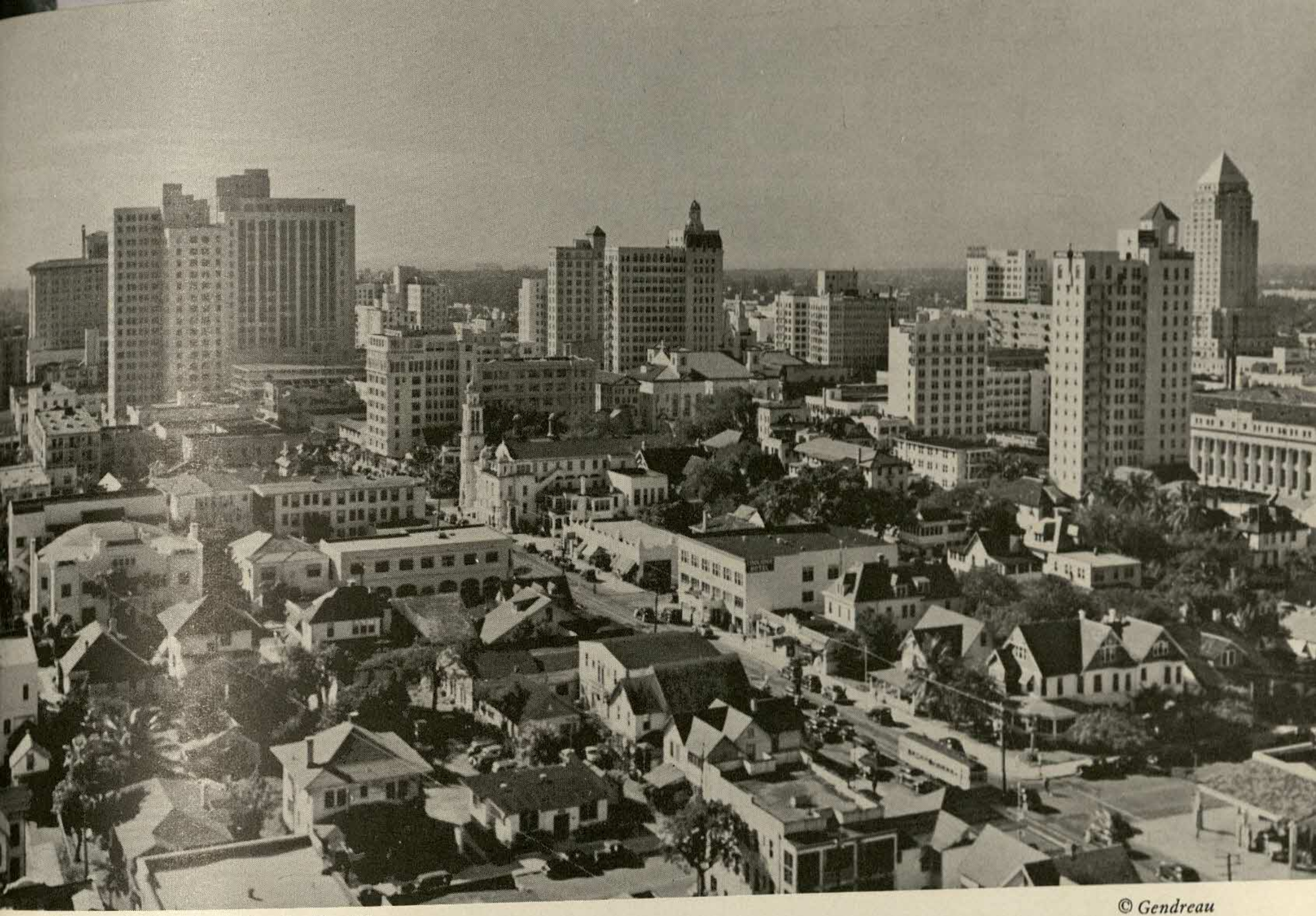
Connections. Its location has helped Miami become a great center for air traffic to or from Latin America. The harbor is much used by passenger boats and fishing boats, but less used for freight. The city has excellent highway and railroad connections.

Work. The largest single group of workers is engaged in wholesale and retail trade, which in turn depends on the tourist business. The people care for perhaps 2 million tourists each year. Manufacturing is relatively unimportant.

Birmingham, Alabama. The sky line of this city is shown in the picture at the bottom of page 217.

Natural setting. This is an inland city, at the southwestern end of the Appalachian Mountains. There are forests and farm lands near-by, but winters are too cold for growing year-round crops. Near the city is an unusual combination of mineral resources—iron ore, coal and limestone.

Size. The population of the city proper is more than 300,000. In the Birmingham urban area, there are more than 500,000 people.

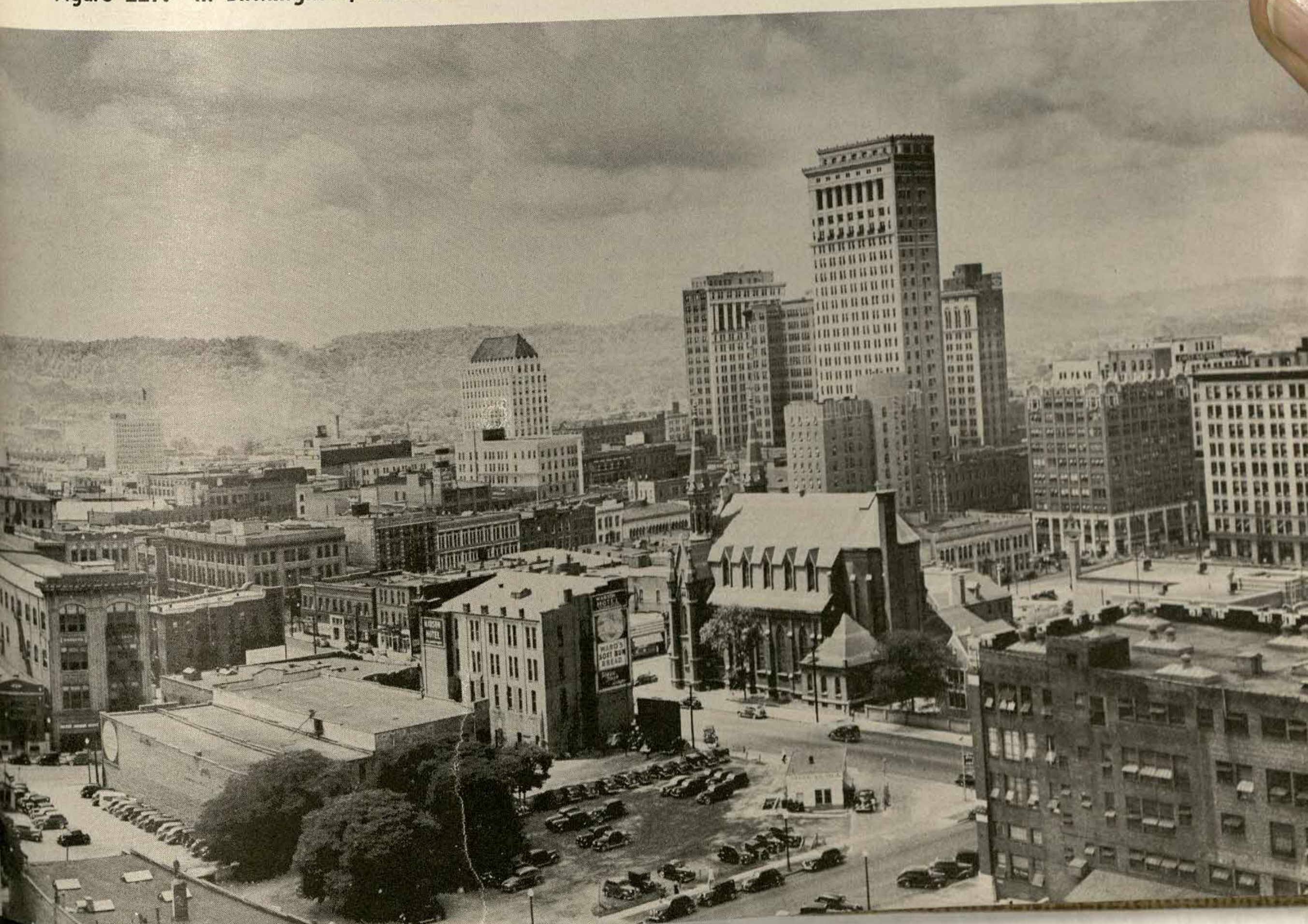


© Gendreau

Figure 226. In Miami, Florida

© Ewing Galloway

Figure 227. In Birmingham, Alabama



History and people. It is said that less than a century ago, Birmingham was a cotton field. Its rapid growth has been due largely to the development of the iron and steel industry.

The population is made up chiefly of the descendants of European settlers. There also are descendants of Negroes who once came from Africa. Birmingham has few foreign-born residents.

Streets and buildings. Most major streets extend northeast-southwest, following valleys. The city has many large factories, and row after row of workers' homes. The sky line of the business district resembles that of many other large American cities.

Connections. Birmingham is a great highway and railroad center. There are good connections by air with other cities of the region. There are no navigable waterways in the city proper.

Work. The leading type of work is manufacturing iron and steel, and their products. Favored by local resources and the regional market, Birmingham has become the chief iron and steel center in the South.

Washington, D. C. The picture at the top of page 202 shows a part of Washington, D. C.

Natural setting. The city of Washington and the District of Columbia face the Potomac River, the boundary line between Maryland and Virginia. To the west are rolling hills; to the east a plain that reaches to the sea.

Size. The population of Washington expands and shrinks as the government needs more or fewer workers. The city itself has nearly a million people, and in the urban area, the population is considerably more than a million.

History and people. In 1791 George Washington chose this site as the home of the national government, though the government did not move there from Philadelphia until 1800. The city has grown continuously since that time. Most of the population is native-born American. There also are always some foreign representatives of other countries.

Streets and buildings. Washington is one of the few great cities which was planned before it was built. There are many broad streets and many parks. Government buildings dominate all others.

Connections. The city is at the head of navigation on the Potomac, but it is not an important port. As the capital city it has excellent air connections with lands overseas and with other parts of the nation. It is also a center of travel by railroad and highway.

Work. This is a city of government. The chief work is working for the federal government. Trade and personal services rank second and third in importance. There is little manufacturing.

Helps in Learning

The following exercises will help you use the check lists for Miami, Birmingham, and Washington, D. C., in order to get an understanding view of those cities:

1. How does Miami's *natural setting* help to explain the leading kind of *work* there?

Which item in the check list helps to explain why there are some recent immigrants from Latin America in Miami?

2. How does Birmingham's *natural setting* help to explain the leading kind of *work* done in that city?

How does the *natural setting* help to explain why Birmingham grew to be a great steel-manufacturing city, while Miami became a great tourist center?

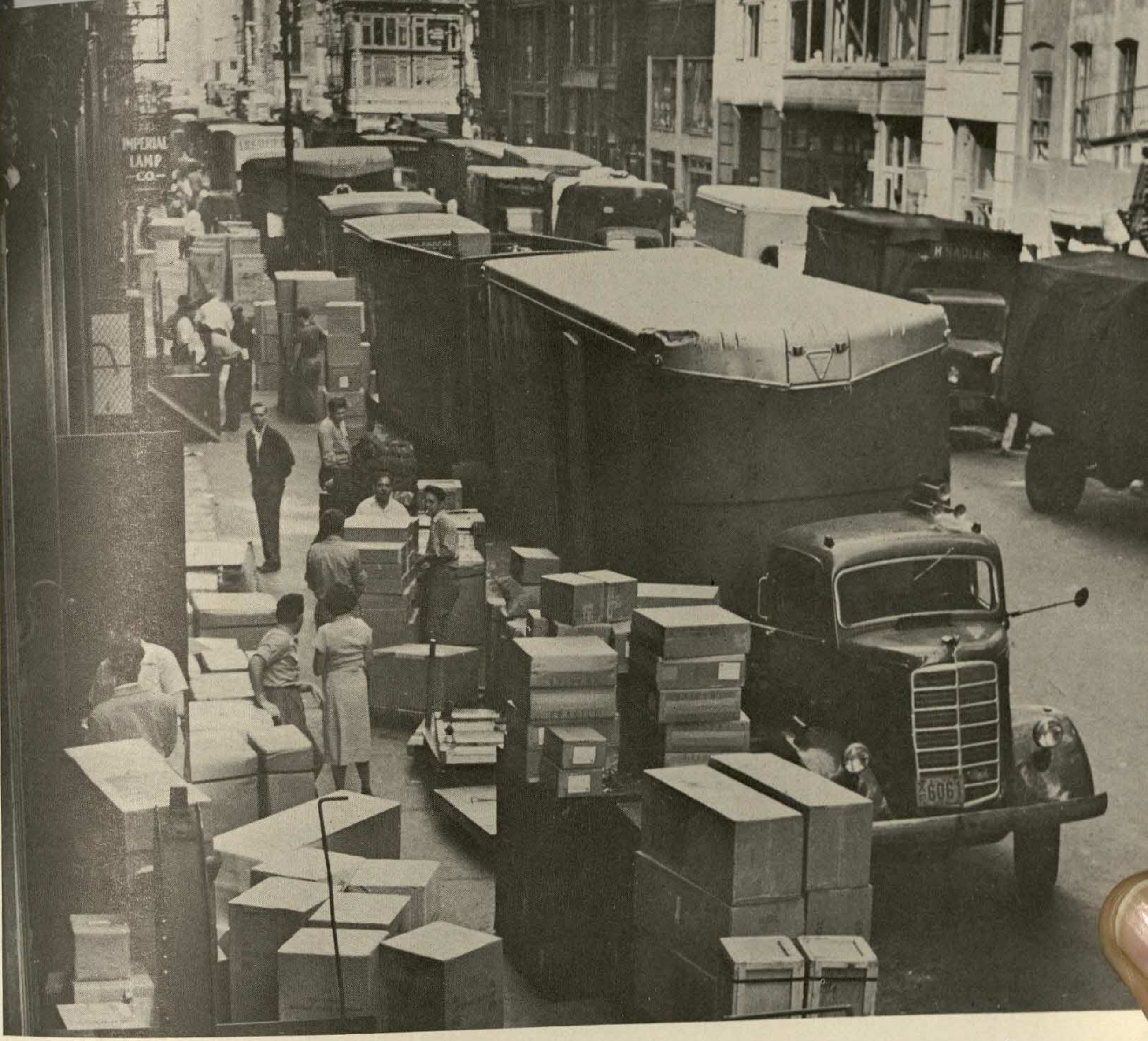
3. How does the *history* of Washington, D. C., help to explain its leading kind of *work?*

How does its *history* help to explain its *streets and buildings?*

How does its *history* help to explain why our national capital is not more centrally located in our country today?

4. Although Miami and Birmingham differ in many ways, there is one important way in which their recent *history* is alike. What is it?

How do the *connections* of each city help to explain the leading kind of *work* done by the people there?



© *Ewing Galloway*

Figure 228. A city problem

Cities of Tomorrow

Old patterns and new. The pictures on pages 219 and 221 illustrate some of the problems of modern cities. Many streets are badly over-crowded. A part of nearly every city is beautiful. Another part may be an ugly place in which to live.

One basic difficulty is that the cities that were built yesterday must serve new needs today. Turn back to the picture on page 157, which shows a street in an American city a little more than a century ago. Carriages move along at their own pace. The buildings are only a few stories in height. There seems to be plenty of room for everything.

Then look at the picture above, which shows a part of the same city today. This street, which was designed for carriages, now must carry the traffic of trucks and automobiles. It may take half an hour to move a few blocks, when there is such congestion. Accidents are frequent. Everyone loses time.

Add to this the fact that the city has increased enormously in size, and that buildings have grown in height. Therefore, many more people must use the same streets.

The particular place shown in this picture has a special problem. Many of these buildings are used for light manufacturing, although they were not designed for that use. When the buildings were constructed, no provision was made for loading and unloading freight. So the sidewalks now have become freight platforms. This is an exceptional problem, but it adds emphasis to the fact that many of our cities were not designed for the world of today.

Without plan. Another basic difficulty is that most cities have grown with little planning. A house was built here, an apartment there, a store and a factory somewhere else. Streets were extended as needed. It seemed that no one cared much about what the city would grow into. Often it seemed that people were powerless to shape its growth. True, there were many plans for parts of cities—a cluster of government buildings, perhaps, or a group of new homes in a single locality. But as a whole, the modern city represents an unplanned growth.

Growing without plan, a city easily becomes overcrowded. One after another the new buildings may be put almost against the older ones, until fresh air and sunlight are lacking for all of them. No space is set aside for playgrounds or parks. Children can play only in the streets. Where there is no planning, each street may carry a heavy load of traffic. Every corner is a dangerous intersection. Perhaps factories are built in the midst of residential areas. Add smoke, noise, dirt, and all too frequently disease. The result is an unpleasant picture of one side of life in the modern city. These conditions may be due in large part to lack of planning.

A world problem. Every city on earth has some of these problems. The problem of housing is not limited to big cities with tenements and crowded apartments, nor to any one country. The picture on the opposite page, for example, was taken on an island in the West Indies. There are many lovely homes on the island. There also are homes which are almost shacks, like those in the picture.

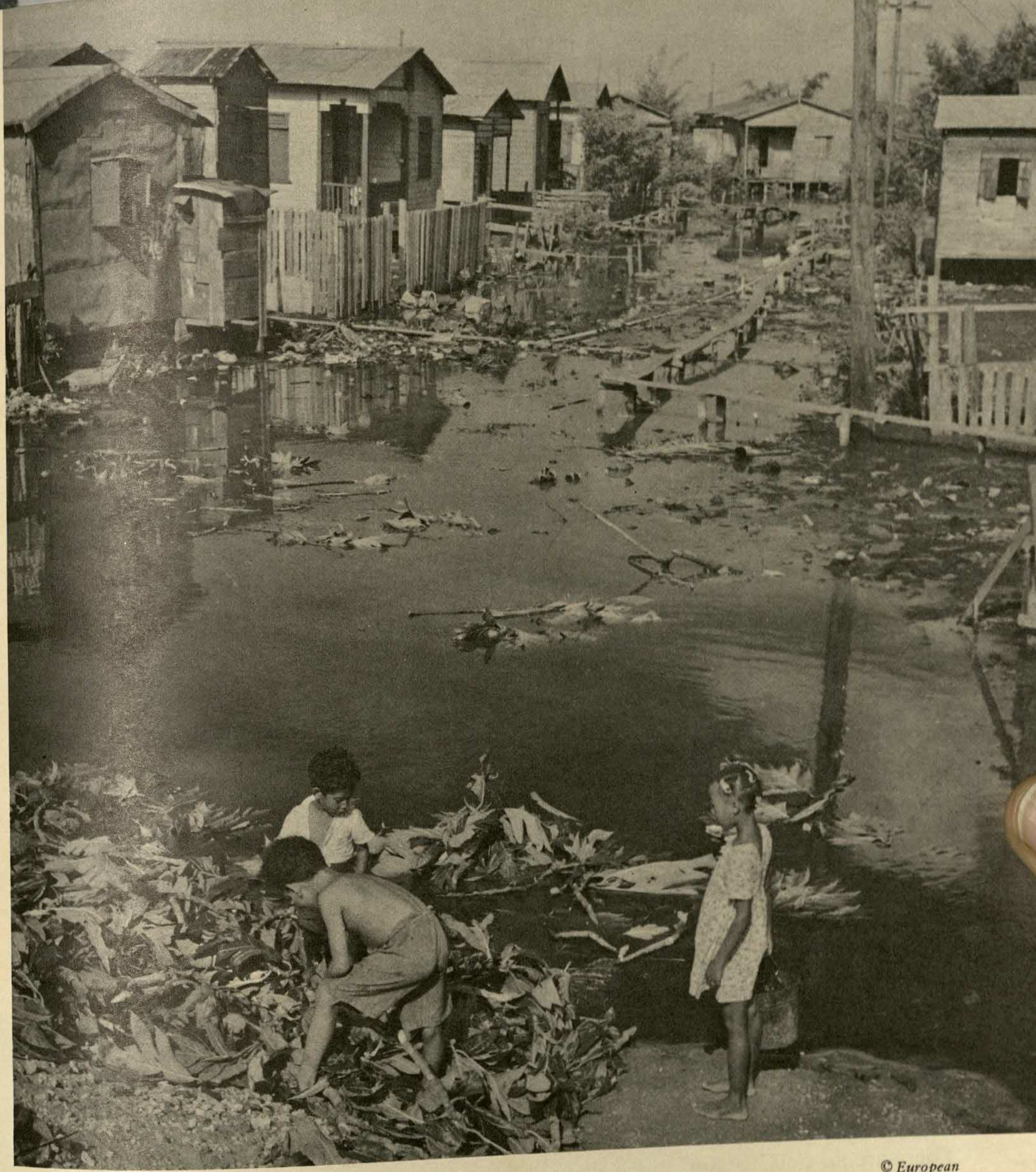
In this neighborhood the streets are unpaved and without sidewalks. The people have built a narrow boardwalk in order to keep out of the mud and water as much as possible. There are serious problems of disease and sanitation. The children in the picture have only the street for a playground.

Faced with such conditions, the people of many cities are trying to plan more wisely for the future. They have learned that it is not easy to change the direction in which a city is growing. They have found that it is possible, nevertheless, to make cities better places in which to live and work. In many schools of our country, pupils are studying these plans for their own city, discovering that they can do something to help with the work of building better cities for tomorrow.

Plans for transportation. As you have seen, page 159, transportation is essential to the life of every city. And the means of transportation may change. Therefore, the city planner must look forward to tomorrow's transportation when he draws his plans today.

Air transportation presents one of the most difficult problems. Travel by air is based chiefly on a saving in time, so an airport needs to be as close as possible to the business center of the city it serves. But an airport needs much space, and in most instances there is little or no extra space in the heart of a great city. Furthermore, tall buildings are a constant hazard to planes, if the buildings are near the airport.

Chiefly for these reasons, most airports have been built at the outskirts of cities. This



© *European*

Figure 229. Where there was little planning

means a great loss of time for passengers. It takes almost as long to get from the center of New York City to the airport, as it does to fly all the way to Washington, D. C., about 225 miles away.

Some have dreamed of building a great platform above the center of a city, on which airplanes could land. It appears, however, that the only practical solution to the problem is to arrange fast and frequent transportation between the heart of the city and the airport. This might be by electric railway, superhighway, or subway.

In the cities of tomorrow, there will be dif-

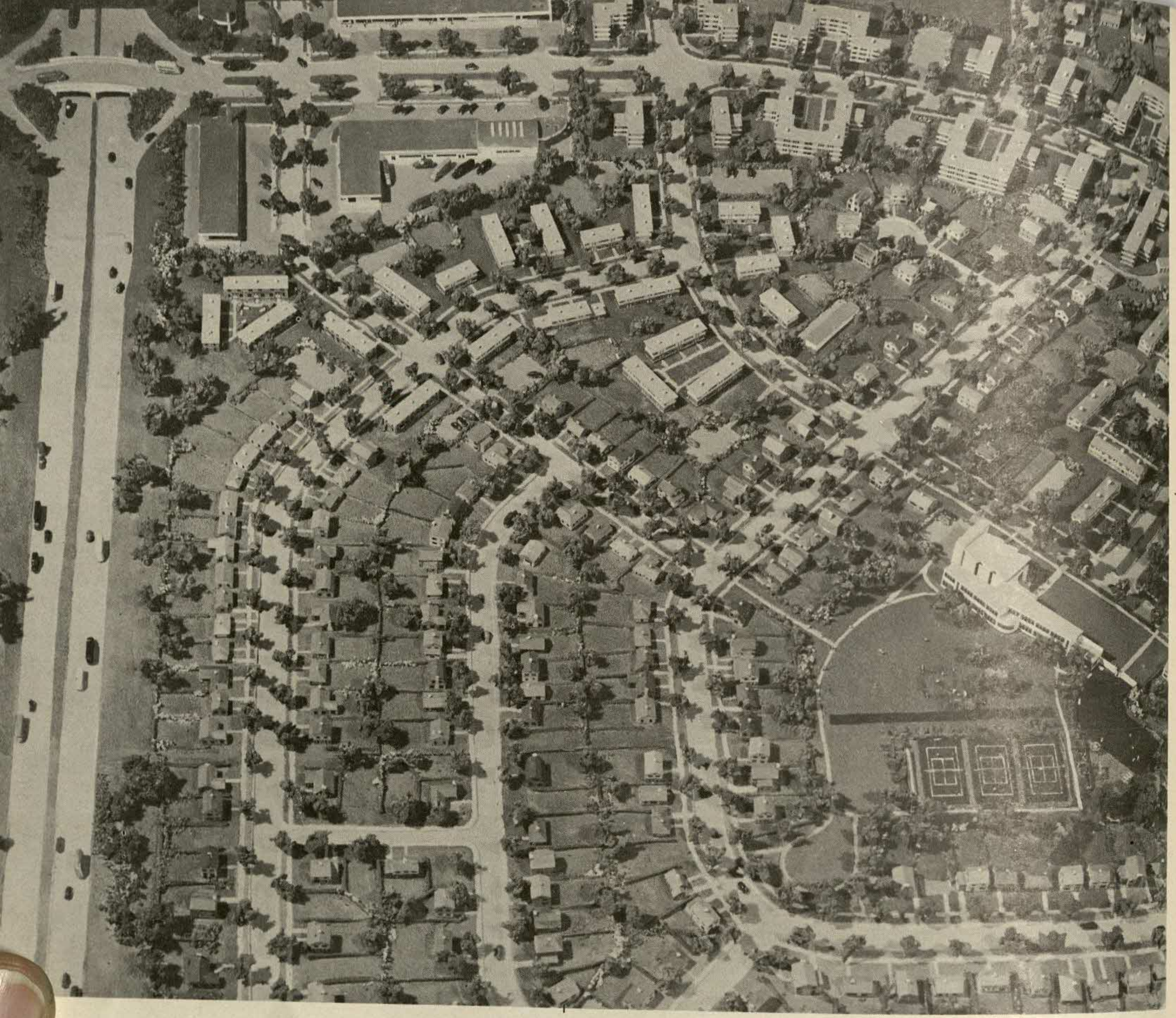


Figure 230. A model community *Chicago Plan Commission*

ferent types of streets, each designed for a particular purpose. Great superhighways or express highways will carry traffic from one part of the city to the other, and will connect the city with the countryside. Traffic moves rapidly and smoothly on these super-streets. There are no stop lights to worry about, for there are no cross streets. Automobiles can enter the highway only at widely spaced places, and there the incoming traffic is led gradually into the main stream of traffic. There can be no head-on collisions, for a parkway in the center of the superhighway separates the traffic moving in one direction from that moving in the opposite direction. There are some highways of this kind now in New York, Chicago, and many other cities.

Other highways will serve other purposes. Such highways will range from the familiar "through streets" to quiet local streets that serve only a few residences. In each city there must be greatly enlarged parking space. Loading platforms must not interrupt the regular flow of traffic. In a word, one should not be able to take a picture like that on page 219, in a city of tomorrow.

Building better places in which to live. The picture above shows one of many designs for the residential areas in the city of tomorrow. This is a photograph of part of a miniature city made to show the advantages of a particular arrangement. In the model which was photographed, the houses are only about an inch high.

The center of this neighborhood is the school, park, and playground shown in the right foreground. Surrounding this center are the homes of the people. Some live in individual houses, as along the streets in the foreground. Others prefer to live in apartment houses, shown in the right background. No one lives more than two or three blocks from the school, park, or playground. Between home and school there are no dangerous streets to cross, for these are all local streets, so arranged that they do not invite through traffic. Every home, whether house or apartment, has plenty of air and sunlight.

There is a shopping center near the upper left hand corner of the picture. This, too, is easily accessible to the neighborhood. As you can see, parking space is provided off the main street, which lessens traffic dangers and congestion.

Along the left side of the picture you can see an express highway, like that described on page 222. This provides excellent transportation for the people who work in other parts of the city. You will notice the intersection in the upper left hand corner. Here automobiles can enter or turn off the express highway without interfering with the regular flow of traffic. A bridge carries the cross traffic over the main highway.

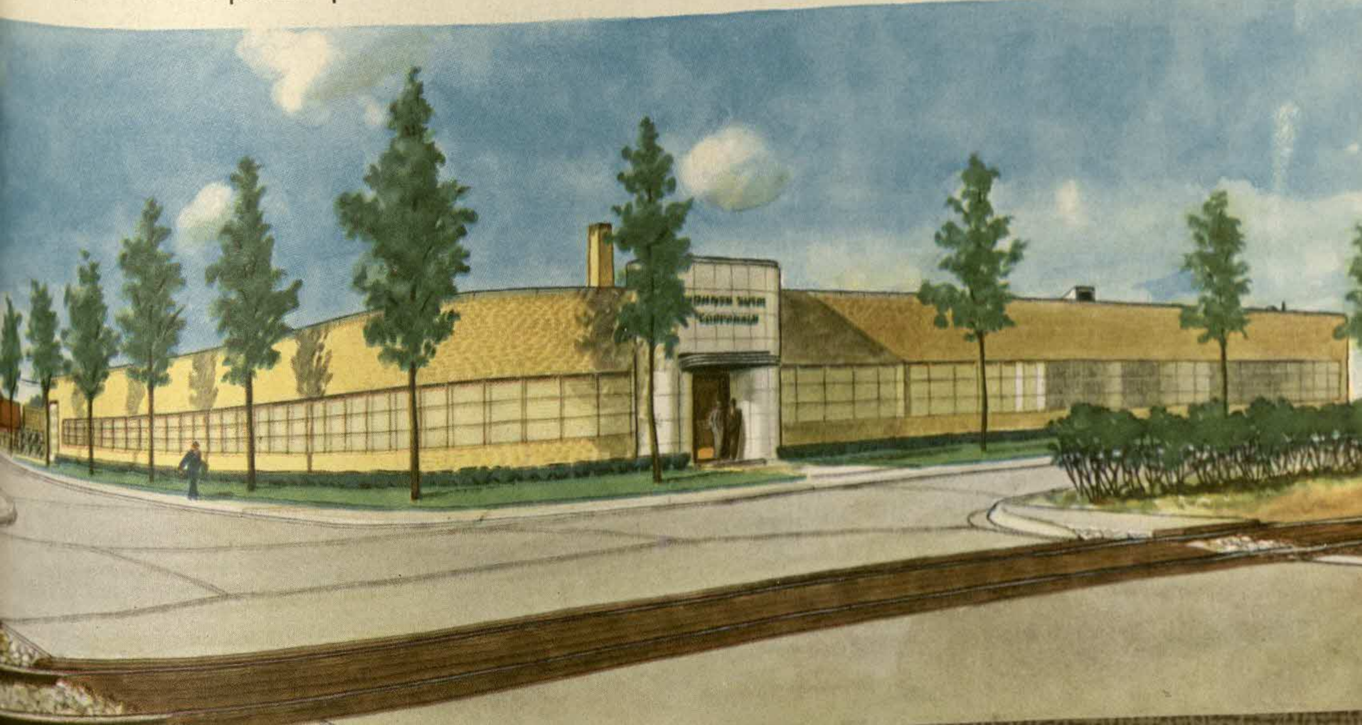
No one needs to be reminded of the advantages of this proposed community in comparison with the one shown on page 221. Unfortunately, however, it is much easier to plan a community than it is to build it. And the tragedy is that after such a community is built, many of the people who need such homes most will not be able to live in them. They must continue to live in cheaper and poorer homes.

What should be done with these older homes, these slums in our cities? Should they be torn down? The answer may be yes, since they can scarcely be modernized. Yet those who tear them down must be prepared to furnish better housing at prices those people can afford to pay. Clearly it will take the most careful planning to get good homes for all the people in the cities of tomorrow.

Better places in which to work. The factory in the picture below is in Chicago. It suggests the kinds of places where many peo-

Figure 231. A pleasant place to work

From photo, courtesy of Clearing Industrial District, Inc.



ple may work in the future. There is nothing gloomy or ugly about this building. A solid line of windows admits ample light, which makes for greater efficiency in work and greater safety. It is a pleasant place in which to work. The factory was built where there was room enough for trees and grass. The railroads, of course, can serve this factory as easily as any others.

Working together. There are great opportunities for improvement, then, in the world's cities. And men have drawn detailed plans showing various ways in which these improvements could be made. Yet this by itself accomplishes nothing, until and unless the improvements are actually made. That will require the cooperation of many groups of people. It will take much time, money, and work. In the end, however, it will be profitable for there are advantages for all people in building better cities for tomorrow.

Helps in Learning

1. What is the meaning of the words *urban* and *rural?*

Of all the people in the world, do more than half, or less than half, live in urban areas?

Is this equally true of the United States? In our country, which group of people far outnumbers the other—the urban people, or the rural people?

2. On the map of urban areas (pp. 160-161), four great clusters of urban areas stand out. Find all four.

One is in our country. In which part of our country is it?

In what great land mass are the other three great clusters? What island country is part of the European cluster? Find one island country which is part of the cluster in eastern Asia.

Which continents are "poor" in urban areas?

3. Read again *How Baltimore Grew* (pp. 156-158). How did the Industrial Revolution help Baltimore to grow?

4. Using the pictures on pages 153 and 157, tell how the Industrial Revolution helped New York to grow.

An Understanding View of Your Community

The check list on pages 162-163 will help you get an understanding view of your community.

Copy the headings from the check list. Under each heading, list facts which you know to be true from your own observation and knowledge of your community. You also may make note of facts, such as late population figures, which you may need to get from a book of reference.

The following questions will help you discover reasons for some of the facts in your check list:

1. How does the *natural setting* of your community help to explain the leading kinds of *work* there?

2. How do the *connections* help to explain the *work?*

3. Does the *history* of your community help to explain the facts you have listed under *streets and buildings?* How?

4. Do any of the facts in your check list help to explain why your community has grown especially rapidly, or slowly?

5. In answering these questions, did you find that you will need to gather more facts about your community?

A Plan for Your Community

Most of the communities in the world have grown with little planning. Is that true of your community? If so, what difficulties are people in your community now having because the community grew without plan?

Do you think it is possible now to draw up a plan for your community which would make it a better place in which to live? If so, which of the following improvements do you think should be included in your plan: *better houses and apartment houses; more houses and apartment houses; better places in which to work; better places in which to play; new school buildings; better transportation?*

Keep in mind that improvements such as these are expensive. Which ones do you think may prove to be practical within the next ten years?

Which groups of people in your community would need to *work together* in order to bring about these improvements?

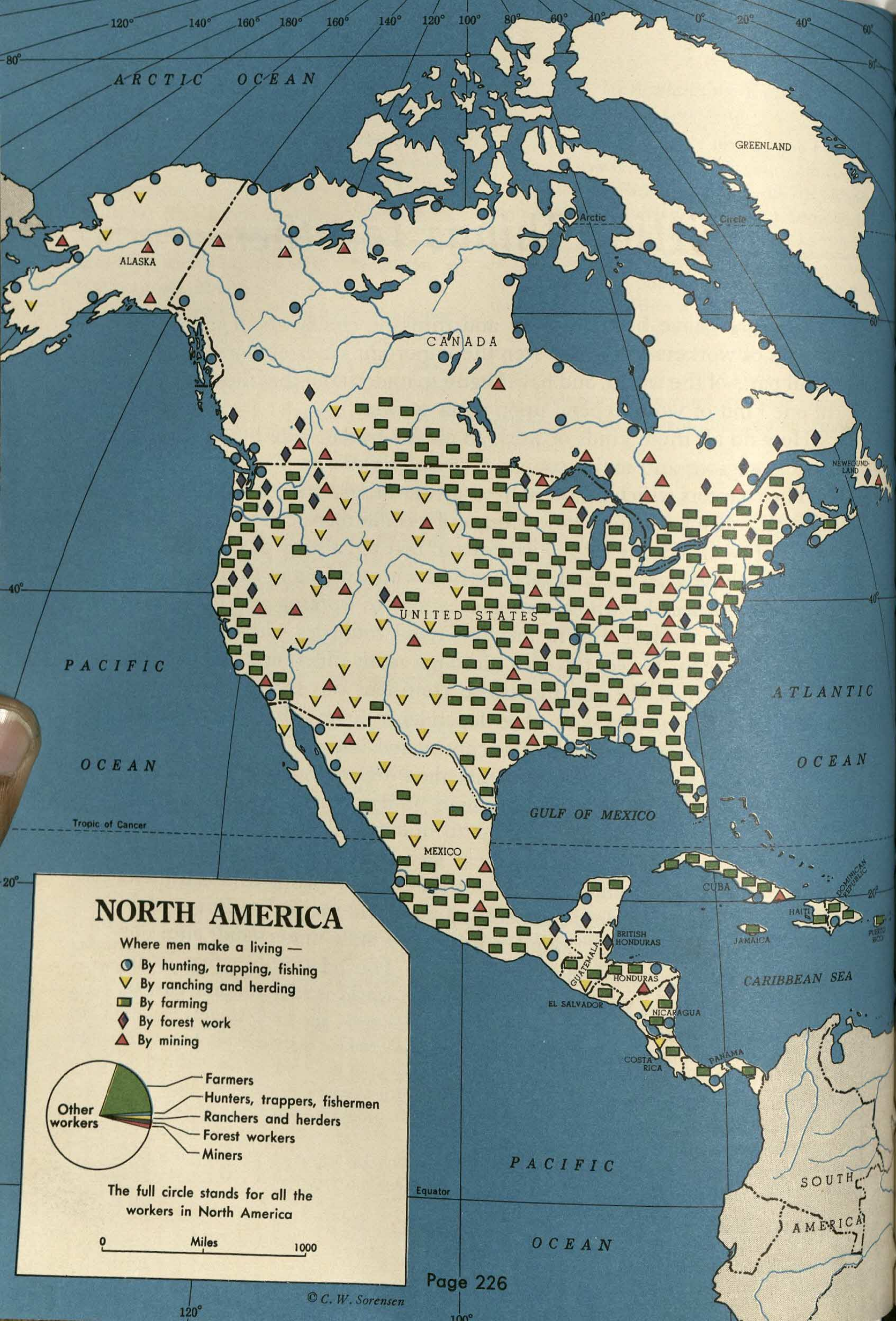
Fitting Things Together

So far we have been studying and thinking chiefly about individual groups of workers. We have seen the important kinds of work going on in all parts of the world, and have begun to understand that those engaged in one kind of work depend upon other workers.

How do all these kinds of work go on day by day, side by side, in the various regions and major countries of the world?

The chapters which follow help to answer this question. A special map of each continent shows how groups of people there carry on different kinds of work side by side. Pictures and text tell a story of relationships between these workers, and relationships with workers in town and city. We begin to see the whole complex pattern of working and living in a continent as a whole and in the individual countries within the continent. We begin to see, too, that although many different kinds of work go on in each of the continents, no continent can supply all its own needs. We learn, therefore, that dependence upon other workers does not stop at national borders or at continental limits.

It is important to understand that men depend not only on natural resources but on the work of other men, going on hour by hour and day by day. It is even more important to understand that throughout the world this is true. The places where men work, who the men are and where they came from, the resources they have to work with—all these facts are needed in order to understand the world we live in. But to complete the picture of our complex world, we must understand, also, the interdependence of all men everywhere. The relationship that exists among all kinds of workers throughout the world is still another part of the foundation of our civilization.



NORTH AMERICA

Where men make a living —

© C. W. Sorensen

LIVING IN NORTH AMERICA

The Continent as a Whole

From five maps to one. The map on the opposite page might well be called *Using Natural Resources.* The symbols on the map show where five different groups of workers make a living directly from natural resources. You are familiar with these workers—hunters, trappers, fishermen; ranchers and herders; farmers; forest workers; and miners (pp. 28-150).

This is a kind of combination map. In each of the chapters about the five groups of workers, there is a map showing the distribution of that particular type of work in the world. Now the information with regard to North America that was shown on the five separate maps is included on one large map.

Rural and urban. The graph on the map tells you that these five groups of workers are only a small part of the total number of workers in North America. More than half of the people live in towns and cities, and make a living from manufacturing, trade, transportation, and special services. The larger urban centers are shown on the map of urban areas, (pp. 160-161) and the map of North America, (p. 382). Of course, thousands of smaller urban centers do not appear on these maps.

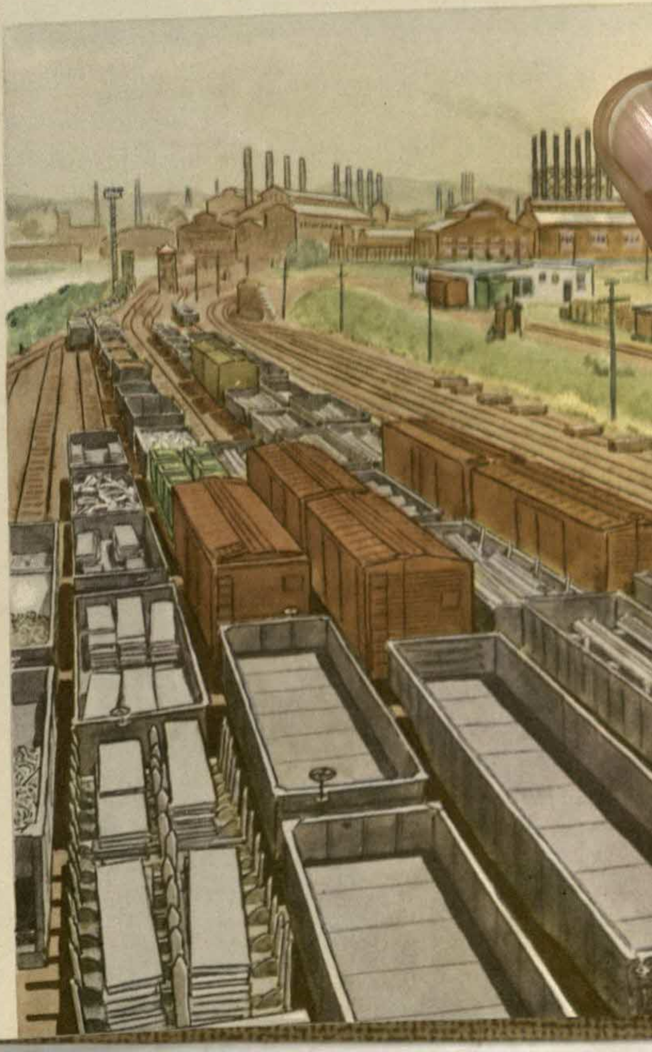
The picture on this page is a reminder of the importance of urban workers. Iron and steel are made in the factories in the distance. The freight cars in the foreground carry the metal products to other factories. Without this work of manufacturing and transportation, the mining of ore would accomplish little. The work of any one group of workers depends on the continued activity of *all* groups of workers, in rural and urban areas alike.

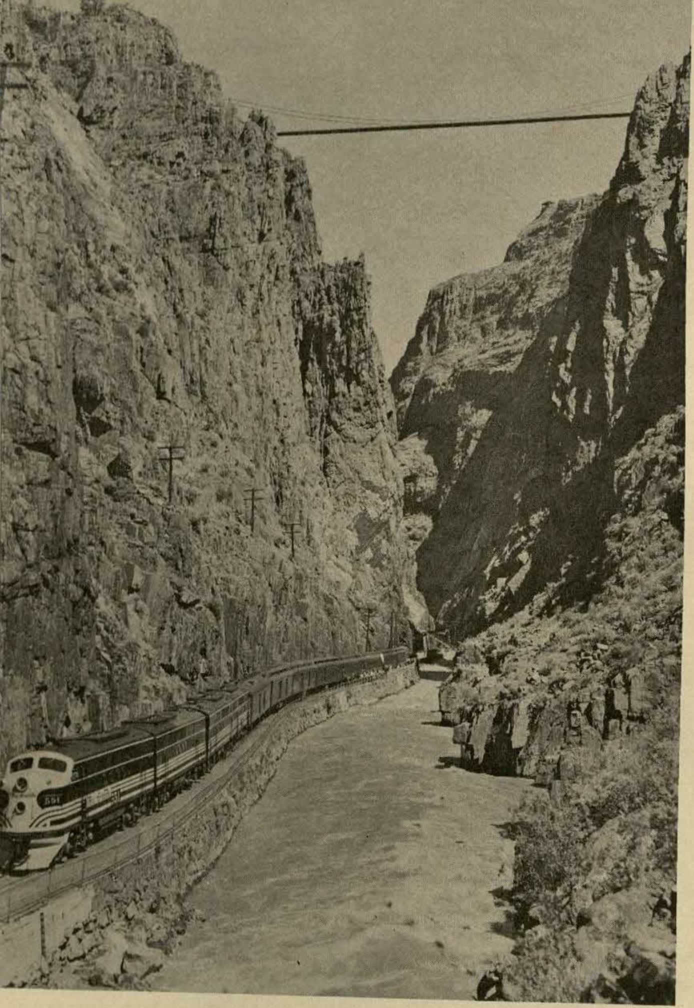
← Figure 232

Land and climate in North America. Three bold features of North America stand out on the map of land forms, pages 380-381. On the west a great belt of highlands reaches from Alaska almost to Panama, forming a kind of wall for the continent. There is a single, vast plain in the middle of the continent, extending all the way from the Gulf of Mexico to the Arctic Ocean. And in the east there is a belt of highlands, much lower and narrower than that in the west. Though there are variations within each of these three

Figure 233. Manufacturing and transportation

From photo by John Vachon





© *Ewing Galloway*

Figure 234. A way through the mountains

regions, they represent the main features of the land of North America.

The pattern of climate is different, yet it is related somewhat to the pattern of land forms. As you should expect, the northern half of the continent is colder than the southern half. And the mountain lands tend to be cooler than the adjacent lowlands (pp. 374-377). The westernmost part of the continent is by far the rainiest (pp. 372-373), since the mountains along the coast catch the rain-bearing winds that blow from the Pacific. In crossing the western mountains, these winds lose most of their moisture.

East of the mountain ranges along the Pacific, a wide belt of dry land reaches from Mexico to Canada. Southeastern United States is more rainy, again, getting its moisture chiefly from winds that blow from the Atlantic Ocean or the Gulf of Mexico.

Related patterns. One of the easiest relationships to see is that between transportation and land forms. There is a striking illustration of this in the picture on this page. The photograph was taken in the Rocky Mountains of Colorado. Men had few choices when building a railroad in this area. As you can see, the railroad track follows the curve of the stream and the wall of the canyon. Hundreds of feet above the tracks a highway bridge crosses the canyon.

A glance at the map on page 226 suggests several ways in which work in North America is related to the patterns of land and climate. A rather narrow strip of farm lands follows the rainy Pacific coast of the United States. Except for this farming area, nearly all the western half of the United States is a dry grazing land. Grazing gives way to farming again almost exactly in the middle of the country, along the 100° meridian. This also is the line between an area of little rainfall (less than 20 inches annually), and an area of greater rainfall (more than 20 inches annually).

The middle part of the continent is one of the world's great plains. It is more than 1000 miles wide and nearly 3000 miles long.

Within the southern half of this great plain is one of the truly magnificent farming regions of the world. Here are the corn belt, the wheat belt, and the cotton belt. However, the northern part of the plain is scarcely used by man, in spite of the advantage of its level surface.

It is largely because of climate, of course, that most of the Canadian plain has been left to the hunter, the trapper, and an occasional prospector. As the temperature maps show (pp. 374-377), this land is bitterly cold in winter. In midsummer, the weather is warm almost to the shores of the Arctic Ocean. But the warm weather lasts only a few weeks, not long enough for most crops to grow. While it is still warm in the Dakotas, the chill of autumn creeps down from the north. Soon, in the northern part of the great interior plain, the long siege of winter begins again.

The land pattern of the eastern highlands does not show boldly on the map on page 226. As you can tell by looking at the map of the United States, pages 230-231, the mountains here are not nearly so high as those in western United States. They are older and less rugged. These mountains do not keep rain from any large areas in the interior. Farming is carried on in many valleys and small plains within the eastern highlands.

The map of urban areas, pages 160-161, shows that nearly all the large cities of North America lie either along the Pacific coast, in the eastern part of the United States, or in southeastern Canada. As you can see, then, there are many cities in some of the chief farming areas. Farming, of course, is not the only reason for the growth of cities. Nevertheless, there tend to be more and larger cities, where there is the largest production of raw materials, including those from the farms.

Political backgrounds. North America is very unevenly divided, politically, as you can see by the maps on pages 226 and 382. There are countries and colonies, large and small, each with a different share of natural resources. This political pattern has changed many times, since the first European settlers came. The story of these changes, resulting in the political pattern of today, will help us to understand many things in North America.

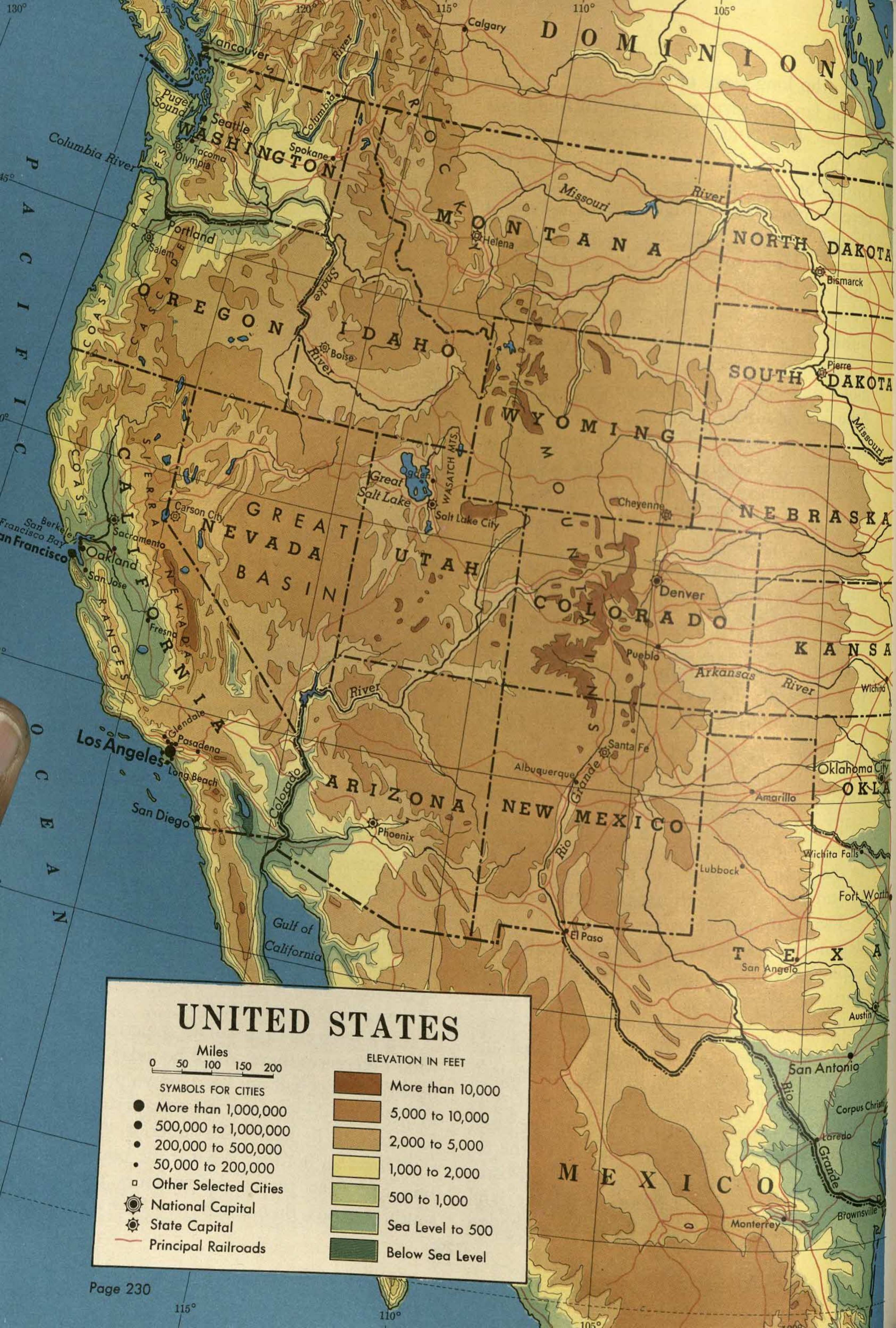
Two hundred years ago there was no independent area in North America, unless unexplored Indian lands in the western and northwestern regions could be considered independent. Denmark had claimed Greenland (p. 382). The British controlled the Hudson Bay area, and part of the eastern coast. "New France" was an irregular zone of French territory cutting through the heart of the continent from the mouth of the St. Lawrence River to the mouth of the Mississippi. Spain controlled nearly all the land surrounding the Gulf of Mexico, though there were also small British, French, and Dutch possessions within the West Indies.

Then the United States broke with England, winning its Revolutionary War (1776-1781). Soon the fever of revolution spread to the lands south of the United States. Before 1850, Spain had lost all its empire in North America except the islands of Cuba and Puerto Rico. France, too, had lost nearly all of her possessions. In the meantime, the United States had been growing.

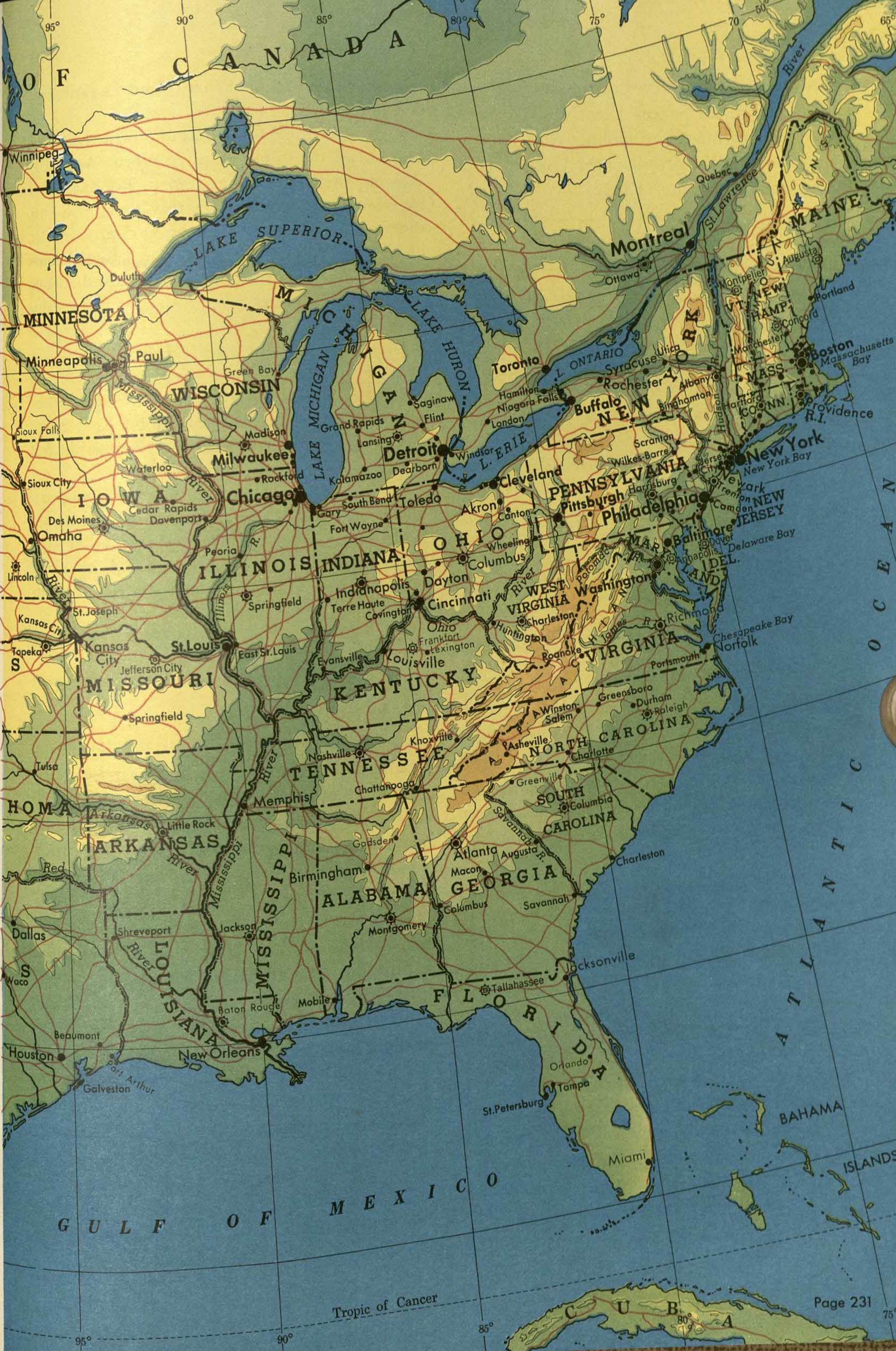
The map on page 382 shows the main features of today's political pattern. Two countries, the United States and Canada, fill about two-thirds of the continent. The rest of the area, including mainland and islands, is divided among 10 smaller, independent countries, and the colonial possessions of Britain, France, the Netherlands, and Denmark. The colonies of France and the Netherlands are tiny islands, not shown on page 382.

Customs and traditions, of course, do not die at once with changes of political boundaries. Thus the story of a once-great French empire helps to explain why the common speech of many people in eastern Canada is French. The story of early Spanish control sheds much light on life and work in Mexico, though that country has been independent for more than 100 years. The early colonial ties with England established a particular pattern of government and speech in what is now the United States. Actually there are five official languages within North America today—English, French, Spanish, Dutch, and Danish. The use of each of these European languages in the new world is connected with the story of changing political patterns.

It is interesting to speculate, sometimes, on what differences there would be today, if the boundary lines had not been drawn precisely as they were. Most of our resources of iron ore, for example, lie near Lake Superior, close to the Canadian border. What if the boundary line had been placed a few miles farther south? Canada, then, might now have a great



UNITED STATES


95°
90°
85°
80°
75°
70
65°
OF CANADA
Winnipeg
Quebec
St. Lawrence
River
LAKE SUPERIOR
Duluth
MINNESOTA
Montreal
Ottawa
MAINE
Augusta
Montpelier
VT.
NEW HAMP.
Concord
Portland
Manchester
Boston
Massachusetts Bay
MASS.
Providence
R.I.
Hartford
CONN.
MICHIGAN
LAKE HURON
LAKE MICHIGAN
Minneapolis
St. Paul
Green Bay
WISCONSIN
Mississippi
Saginaw
Flint
Grand Rapids
Lansing
Toronto
L. ONTARIO
Hamilton
Niagara Falls
London
Syracuse
Utica
Rochester
Albany
Buffalo
NEW YORK
Binghamton
Hudson R.
Sioux Falls
Madison
Milwaukee
Detroit
Windsor
Dearborn
L. ERIE
Scranton
Wilkes-Barre
Jersey City
New York
New York Bay
Newark
Waterloo
Rockford
Kalamazoo
Sioux City
IOWA
Cedar Rapids
Davenport
Des Moines
Omaha
River
Chicago
Gary
South Bend
Toledo
Fort Wayne
Cleveland
Akron
Canton
PENNSYLVANIA
Harrisburg
Pittsburgh
Philadelphia
Trenton
Camden
NEW JERSEY
Baltimore
Dover
Delaware Bay
Annapolis
DEL.
MARYLAND
Lincoln
Peoria
Illinois R.
ILLINOIS
INDIANA
OHIO
Wheeling
Columbus
Springfield
Indianapolis
Terre Haute
Dayton
Cincinnati
Covington
WEST VIRGINIA
Potomac
Washington
Charleston
Huntington
River
St. Joseph
Kansas City
Topeka
Kansas City
St. Louis
East St. Louis
Jefferson City
Ohio
Frankfort
Lexington
Louisville
Evansville
James R.
Richmond
Chesapeake Bay
Norfolk
Roanoke
VIRGINIA
Portsmouth
APPALACHIAN
MISSOURI
Springfield
KENTUCKY
Winston-Salem
Greensboro
Durham
Raleigh
NORTH CAROLINA
Asheville
Charlotte
Knoxville
Nashville
TENNESSEE
Chattanooga
Greenville
Tulsa
HOMA
Memphis
River
SOUTH CAROLINA
Columbia
Savannah R.
Arkansas
Little Rock
ARKANSAS
River
Gadsden
Atlanta
Augusta
Red
Mississippi
MISSISSIPPI
Birmingham
Macon
GEORGIA
Charleston
ALABAMA
Columbus
Savannah
Dallas
Shreveport
Jackson
Montgomery
River
LOUISIANA
Jacksonville
Waco
Tallahassee
FLORIDA
Mobile
Baton Rouge
Beaumont
New Orleans
Houston
Port Arthur
Galveston
Orlando
Tampa
St. Petersburg
BAHAMA ISLANDS
Miami
ATLANTIC OCEAN
GULF OF MEXICO
Tropic of Cancer
95°
90°
85°
80°
75°
CUBA

iron and steel industry, perhaps buying coal from the United States. Clearly, the United States is fortunate in having rich natural resources, and the people of the United States have made much use of them.

Helps in Learning

1. Suppose you were able to fly across the United States from west to east, at 40° N. latitude. What would you expect to see, judging by the maps on pages 226 and 382?

2. In or near which region of North America do you live, the western highlands, the middle plain, or the eastern highlands? Refer to the rainfall map, pages 372-373, and the temperature maps, pages 374-377. Then write a paragraph about the land and the climate in the part of North America where you live.

3. Explain how the western highlands affect men's work in much of western United States.

4. Turn to the map of cultivated land, pages 384-385. Which country in North America has most cultivated land? What countries rank second and third?

5. *A class project—an atlas of North America.* Make a set of simple maps of North America, showing one feature on each map. For example, by referring to the atlas in this book, you can show on one map the average annual rainfall; on another July temperatures, or January temperatures; or big cities or air routes, and so on. On each map locate your own community by a dot.

Use simple outline maps of North America or trace the map on page 382. Colored pencils or crayons will help make your maps more useful. Be sure to print a legend on each map.

A "cover committee" can be responsible for making a cover for the class atlas.

6. *Using graphs and statistics (pp. 396-400).* Make a list, in order, of the largest four countries in area in North America. Make another list, in order, of the largest four countries, in terms of population. What surprising differences do you find?

The United States

In every way except land area, the United States is the chief country of North America. It is the greatest in population, with more than 150 million people. It is the greatest in natural resources, in production, in power, and in influence. Canada has more square miles of territory, but, as you have discovered, much Canadian land is almost waste land. Fewer than 15 million people live in Canada.

The American People

Who are they? The answer to this question has varied with the years. If it had been asked 500 years ago, the answer would have been "some thousands of Indians." The present-day answer is suggested by the names you can read in the picture on page 233. The American people are a mixture of many peoples.

This picture, of course, does not indicate all of the different peoples who now have become Americans. A few Indians remain in our land, about 350,000 of them. All other Americans came from abroad, or are the descendants of people who came here from other countries. Small numbers came from the Orient—from China, Japan, and the Philippines, particularly. Many more were brought from Africa, as Negro slaves. Some came from Canada or Latin America. Most of them, however, came from Europe. So the American people now are chiefly of European ancestry. About one person in 400 is an Indian; one in 10 is a Negro. Less than one person in 600 belongs to groups whose ancestors lived in Asia.

Since 1930, the number of immigrants coming to the United States has averaged

© Ewing Galloway

Figure 236. An American street scene

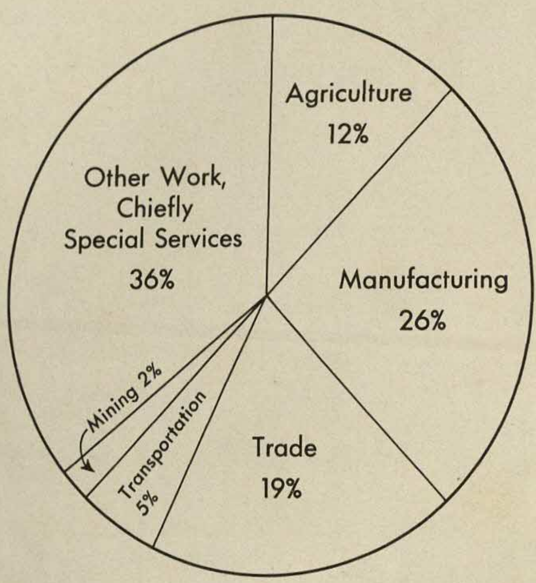
somewhat less than 100,000 persons a year. This may seem a large number, but it is a small number when compared with the number who came in some earlier years. During certain periods, more than a million people have come within a single year. Between 1900 and 1910, more than two million people moved from Italy alone to the United States, while another two million came from Austria-Hungary, and more than a million and a half from Russia.

The records for immigration were not kept for the nation as a whole before 1820. Since then, however, a grand total of nearly 60 million people have moved here from other countries. Since 1850, more people have come from Britain and Ireland than from any other lands. Next, in order, were immigrants from Germany, Italy, Austria-Hungary, Russia, and Canada. Truly the people of the United States are many peoples in one.

How do they make a living? The graph on page 234 shows how the American people make a living. In an average group of 100 workers, only about 12 are engaged in agriculture generally, which includes both farming and ranching. About 26 are engaged in manufacturing, 19 in trade, 5 in transportation, and 2 in mining. Nearly all the rest are special service workers. These figures add much meaning to the statement frequently heard, that the United States is an industrial nation.

In the future, the work of the American people may be somewhat different, for ours is a changing population. The Census of 1790 showed only about 3 million people in our country. Now there are more than 50 times that number.

As the population grew in size, it changed



HOW THE WORKERS IN THE UNITED STATES ARE DIVIDED AMONG VARIOUS OCCUPATIONS

Figure 237 *Based on U. S. Census*

in character. In 1790, before the influence of the Industrial Revolution was felt, our nation, like most others, was chiefly agricultural. Manufacturing gained slightly as the years passed, and farming declined a little, in relative importance. Now, as you have seen, less than one-eighth of all the workers are engaged in agriculture. Manufacturing has become the chief work of the American people. A rural nation has become a nation chiefly of urban dwellers and urban workers.

The graph on page 58 is of great interest at this point. It shows one of the developments that has made these changes possible. As you have read (p. 58), a grain farmer in 1940, using power-driven machinery, could do 15 times as much work as a grain farmer in 1820. It is this revolution in farming that now enables less than one-eighth of our people to produce enough food for themselves and for the other seven-eighths of the people in the nation.

Homes on the farm. The farmers of the United States live better than those in most countries. Yet it would be a mistake to think that all farmers in our country have an equal share of the comforts and conveniences of life. This is illustrated by the three pictures on page 235.

The picture at the top shows a house with seven or eight rooms. It is equipped with electric lights, indoor bath and toilet, gas or electric stove, and a furnace. There is a telephone, a radio, and perhaps a television set. This is one of America's fine farm homes.

The home shown in the middle picture is also a comfortable home, though apparently it does not have electric lighting. It has stoves rather than a furnace. There is a radio, but perhaps no indoor bath or toilet.

The picture at the bottom of the page shows another American farm home, a simple two-room cabin. It may be as clean and tidy inside as either of the others. However, this farm family is without telephone service, electric lights, and other modern conveniences.

Which of these is a typical farm home in the United States? Statistics can help us find the answer. The following facts are taken from a 1950 report by the United States Census.

In every 100 farm homes in the United States, approximately—

78 have electric light.
17 are heated by furnaces.
42 have running water.
93 have radios.
3 have television sets.
2 have only one room.
5 have two rooms.
11 have three rooms.
82 have four rooms or more.

It would be difficult to find a complete explanation for these differences—why one farm family has fewer comforts and conveniences than another. Undoubtedly, in many cases, the land is at fault. The farmer may have too little land, or the soil may be poor. The farm may be badly located with regard to markets. Methods of farming may be responsible. The farmer may grow the wrong crops or he may not care for his crops properly. Limited education may be partly responsible. Or it may be that the farmer spends his money on something other than improving his home. Whatever the reasons, these statistics point to the need of better housing for many American farm families.

Regardless of the style or comfort of the home, nearly every farm family enjoys certain things that go with life in America. Every child can go to a free public school. Nearly everywhere some medical aid is available even if a family is too poor to pay for it. The most remote farm family has the protection of the laws of the state and the nation. The county sheriff is the "policeman" of rural areas. Postal service goes to every corner of the land, and with the mailmen may go newspapers, magazines, and letters. Practically every farmer has access to a store, which offers for sale some goods of the modern world. And in the matter of homes, definite progress is being made. For a few years ago only 20 out of every 100 farm homes had electric light.

Homes in town and city. Urban life also has its contrasts, and its services available to all. The Census report of 1950 tells the following about homes in American cities having a population of 2,500 or more.

In every 100 city homes in the United States, approximately—

99 have electric light.
62 are heated by furnaces.
96 have running water.
97 have radios.
16 have television sets.
3 have only one room.
8 have two rooms.
16 have three rooms.
73 have four rooms or more.

Living quarters supposedly are more crowded in the city, where about half of the people live in apartments. Yet, in the country as a whole, the average city home has about the same number of rooms as the aver-

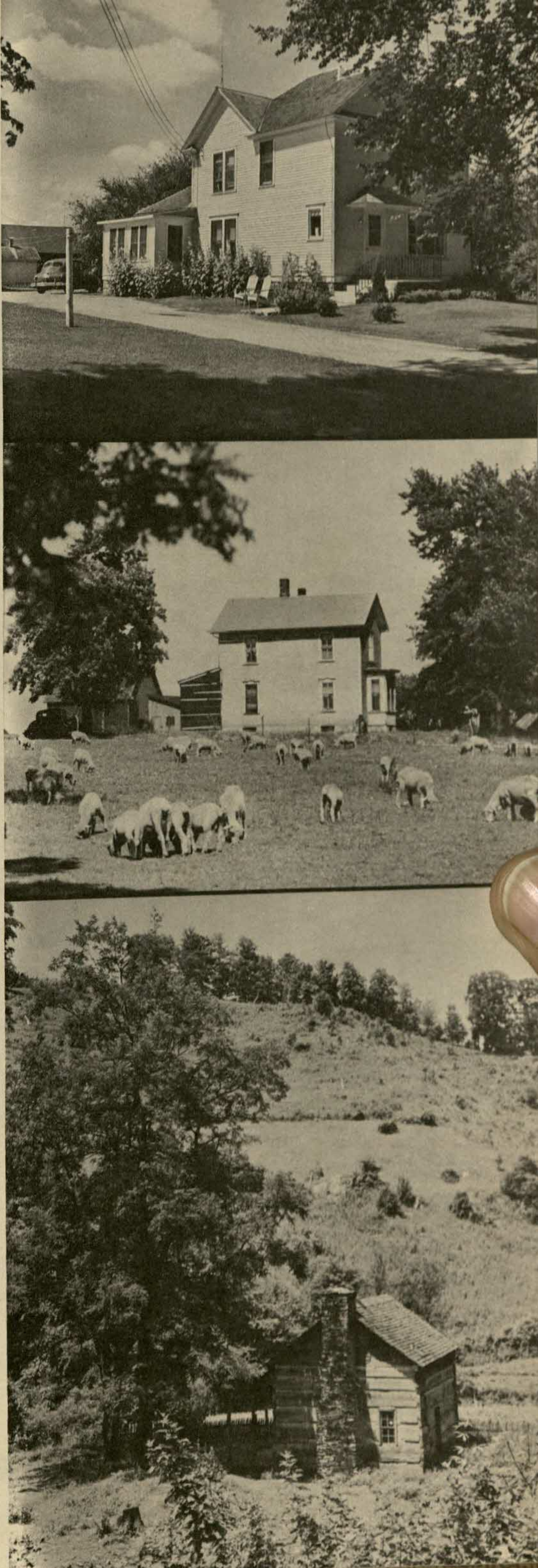


Figure 238. Three farm homes →

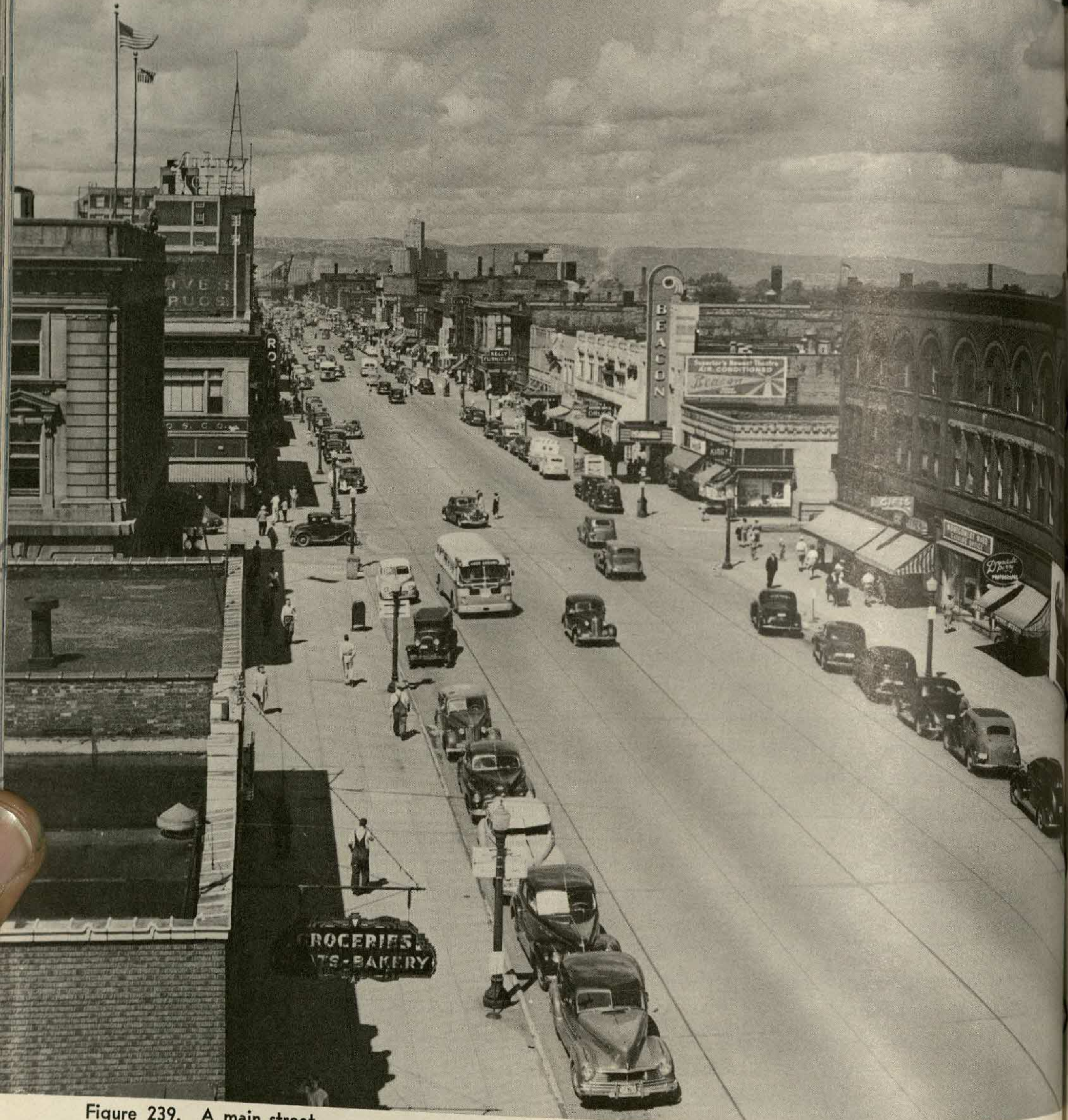


Figure 239. A main street

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age farm home. Much greater contrasts appear in other items, such as the per cent of homes which have electric lights and running water. These particular services, of course, can be supplied more easily where many homes are grouped together in an urban area than where homes are more widely spaced, as in a rural area.

Along main street. In nearly every American town and city, most of the work in trade and special services is concentrated along some main street, much like the street in the picture above. This is the main business district of Superior, Wisconsin. No other city has exactly the same arrangement of buildings and businesses. From coast to coast, however, America's "main streets" are remarkably similar. The wide street and parked automobiles; the buses; the post office with a flag flying above it and a mail box on the sidewalk in front of it; the motion picture theater; the hotel; the stores selling groceries, meat, drugs, furniture, hardware, and clothing; the neon lights; the unbroken line of store fronts —all these could be duplicated in cities in any one of the 48 states. A traveler may not be able to tell by the appearance of the main street whether he is in New Hampshire, Nebraska, or Oregon.

Undoubtedly the fact that all this vast land is under one government has contributed much to this sameness. Excellent transportation and communications have helped, also. From sea to sea, people look at the same movies, hear the same network radio programs, read newspapers served by the same news-gathering organizations. People can travel with ease from corner to corner of the entire land, and goods are shipped far and wide from many different centers. A single mail-order company, for example, has customers in almost every city, town, and village in the United States. Probably nowhere in the world are cities so much alike, over so wide an area, as in the United States.

Helps in Learning

1. "The American people today are a mixture of many peoples." Is this true of the people in your community? Tell why.
2. Are other languages, besides English, commonly spoken in your community? Which ones? If possible, bring a foreign-language newspaper to class and try to read the advertisements, the headlines, the date, the weather report.
3. Make a list of the different countries from which people in your community, or their ancestors, have come.
4. Does the main street in the picture on page 236 remind you of the main street in your community? If so, how? In what ways is it different?

How the States Differ

Each one of the states differs in some ways from all the others. It is true that you can drive across a state boundary and not know it, except perhaps for a small sign along the highway. The land looks the same on both sides of the boundary. Yet every state has its own special combination of land and people and work.

Some differences would be hard to see directly. For example, one cannot see the average annual rainfall by driving along a highway. But the plants and trees one sees suggest whether the rainfall is heavy or light.

There are also certain differences in laws. The various states may have their own laws concerning marriage, divorce, corporations, traffic, theft, inheritance, education, elections, and so on. In no two states do people pay exactly the same kind or amount of taxes.

We are more concerned with differences in land, resources, and the work of the people than we are with such matters as corporation law and taxes, for example. We must not forget, however, that laws governing corporations and taxes might attract industries to one state, and drive them from another. These laws may help the workers or hinder their progress. The government of a state, therefore, has a part in explaining the way in which people live and work in that state.

Discovering differences. The map on pages 230-231 tells us that the various states differ greatly in elevation of land, in shape, in size, and in the number of railroads and of large cities. Texas is the giant of the states; Rhode Island is the smallest. But you cannot tell from the map exactly how much the differences are, in size. For that you will want to turn to the graphs and statistics (pp. 396-400). There you learn that Rhode Island has 1214 square miles of territory, while Texas has 267,339 square miles, more than 200 times as much.

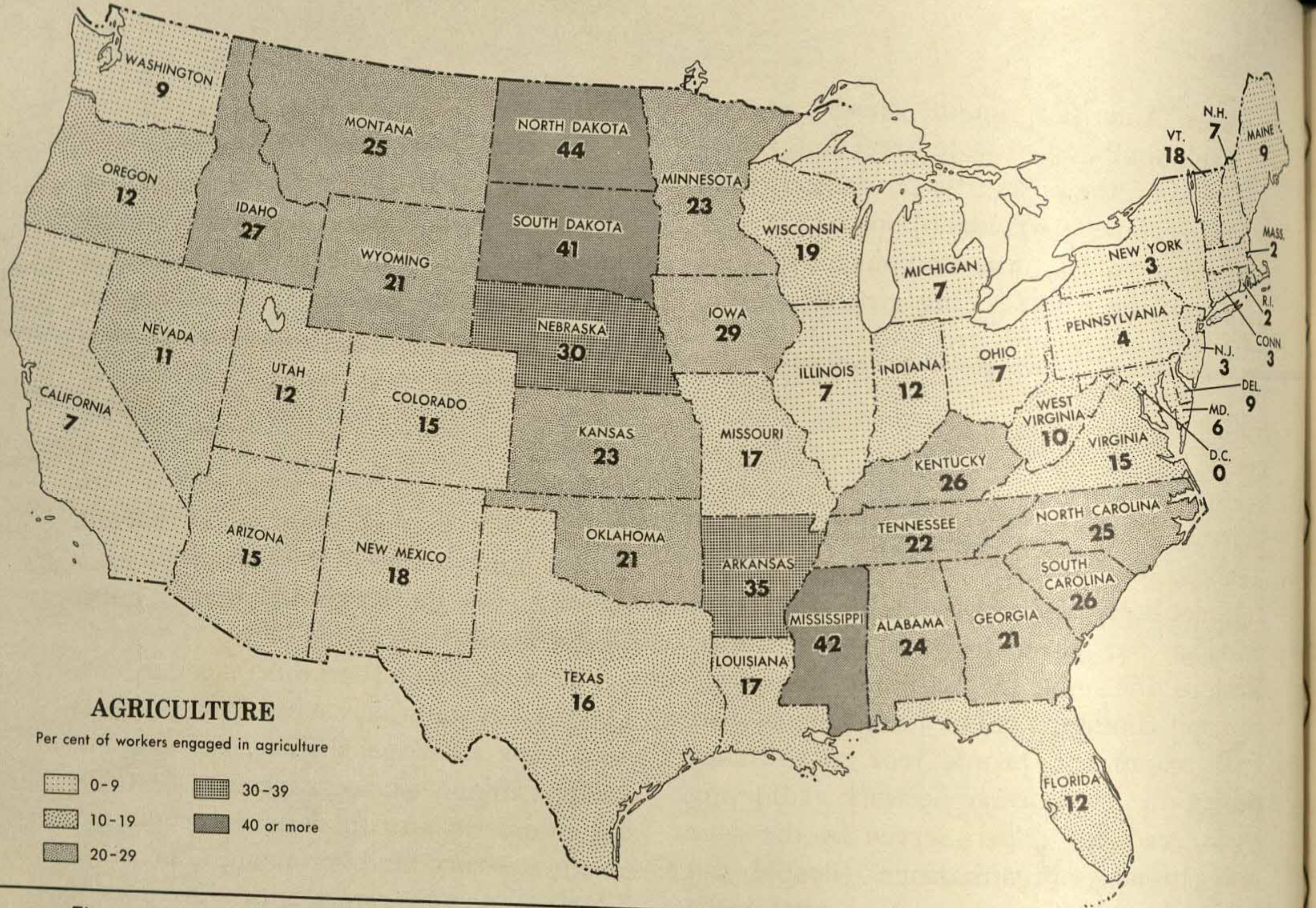
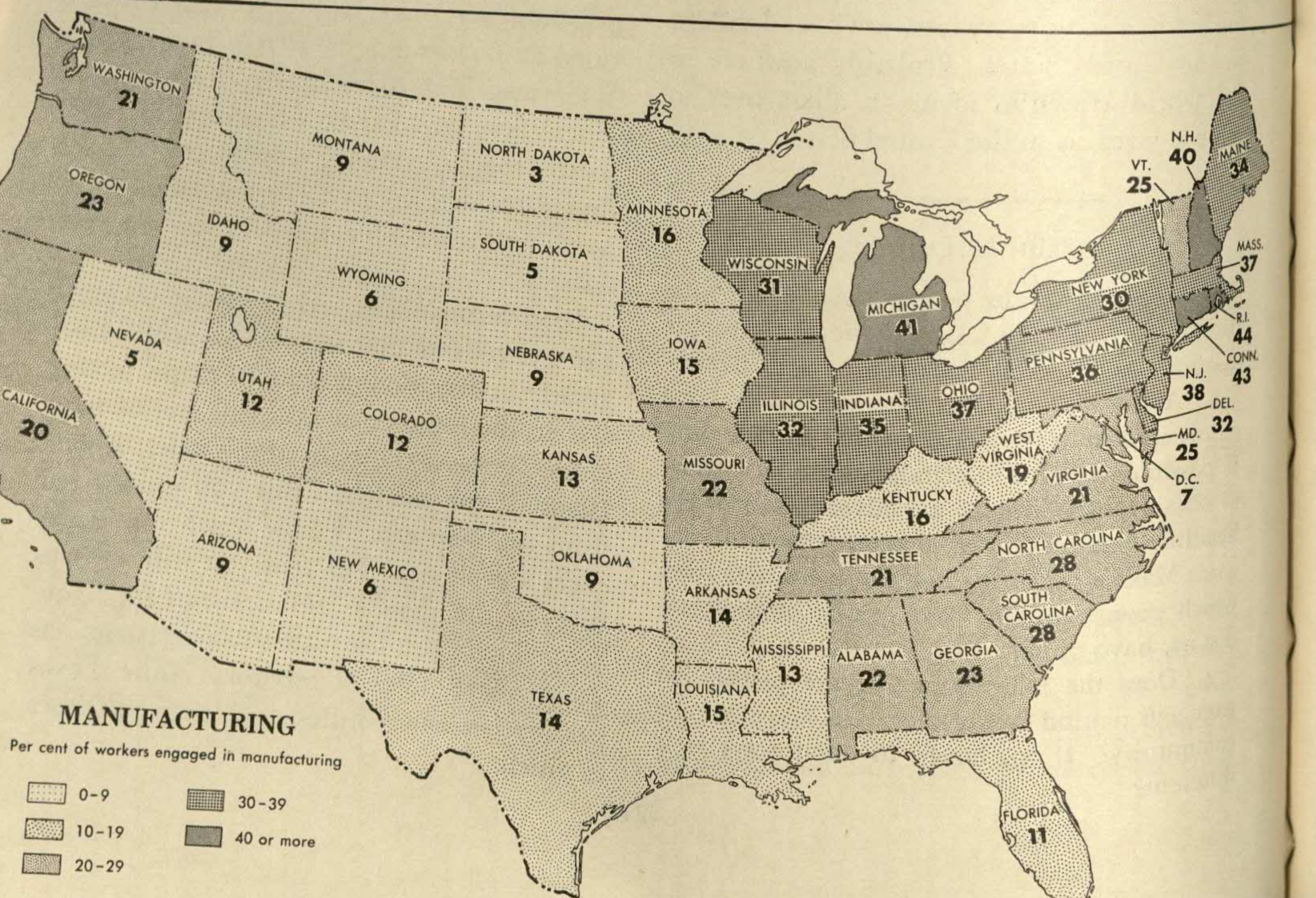


Figure 240

Based on U. S. Census

Figure 241

Based on U. S. Census



The map on pages 230-231 suggests differences in population, indicated by the presence or absence of cities. States such as Massachusetts, New York, and Pennsylvania have noticeable clusters of cities. For exact comparisons, of course, you must turn again to the statistics, discovering that New York has the largest population, followed by California. Nevada has the fewest people—only about 160,000 in the entire state. It is nearly one hundred times as large as Rhode Island, but has only about one-fifth as many people. From these facts you know what to expect about the density of settlement, comparatively, in Nevada and Rhode Island.

The map on page 226 shows clearly that there are great contrasts in work within the continent as a whole, and also within the United States. The maps on page 238 add to our understanding of some of these differences. As you can tell by the legend, the first of these two maps shows how the states rank with regard to the per cent of workers engaged in agriculture. This includes ranching and farming of all types. The second map tells a similar story about workers engaged in manufacturing. Neither map shows differences that may be found within an individual state. Each state is here considered as a whole, regardless of local contrasts.

Contrasts in agriculture. As the map at the top of page 238 shows, there are great differences in the relative importance of agriculture in the various states. The statistics on page 241 show the same contrasts that appear on the map. In Rhode Island about two workers in every 100 are engaged in agriculture. In Mississippi more than 40 workers in every hundred are engaged in agriculture.

For years certain states including Illinois, Indiana, and Iowa have been called "farm states." It is true that they are great farm states in the sense that large and valuable crops are produced in them. Yet it is surprising to find how small a per cent of the workers in these states are farmers. Even in Iowa, often considered a typical farm state, less than a third of the workers are farmers (pp. 238, 241).

There are only 5 states in which 30 or more workers in every hundred are engaged in agriculture. They are Arkansas, Mississippi, Nebraska, North Dakota, and South Dakota.

Differences in manufacturing. The lower map, page 238, and the statistics, page 241, show contrasts in manufacturing that are almost as striking as those in agriculture. In North Dakota, only three in every 100 workers are engaged in manufacturing. In Rhode Island, 44 per cent of the workers work in factories, large or small.

The pattern shown on this map (Fig. 241) is almost the reverse of that on the map above it. Northeastern United States is the outstanding manufacturing region. You can count fourteen states where at least 30 per cent of the workers make a living from manufacturing. These states reach from Wisconsin and Illinois, on the west, to Maine, on the east. In the country as a whole, the East and the Far West stand out clearly as areas where the largest per cent of workers are engaged in manufacturing.

Similarities in other kinds of work. The last three columns of figures on page 241 present facts which may be equally helpful to us in undertsanding our country. Look up and down the list for *Trade,* noting how much or little the numbers differ. It is a striking fact that in all 48 states, and in the District of Columbia, the per cent of workers in trade varies much less than that of workers in agriculture and manufacturing. One reason is that in our country as a whole, rural people and city people buy similar amounts of goods.

There are few great contrasts also in the figures in the column labelled *Transportation and Communication.* In 35 of the 48 states the workers in this group total not less than 5 and not more than 10 out of every 100 workers. It appears that rural areas and urban areas are in equal need of transportation and communication.

There is an important story in the last column, too. You will notice at once how large these numbers are, when compared with those in the other columns. It is a truly amazing fact, that in most of the states, at least one-third of the workers are not included in the familiar groups—agriculture, manufacturing, trade, and transportation and communication.

Who are these workers represented by the last column? They are chiefly a vast army of special service workers, described in detail on pages 203-214—hotel keeper and lawyer, banker and soldier, clergyman and policeman.

Helps in Learning

1. Find your own state on the maps on page 238. How many out of every 100 workers are engaged in agriculture in your state? How many are engaged in manufacturing?

2. On these maps, how does your state compare with the states which border it? Choose a state in another part of the country and compare it with your state.

3. Find your state in the list of states on page 241. According to the columns of figures, how many workers out of every 100 in your state are engaged in the kinds of work listed?

4. What might "other work" include? Be sure to think of the people, besides farmers and ranchers, who work directly with natural resources. Also think of various city workers besides those engaged in trade, transportation, or communication.

5. Choose four states in this list to compare with your state. Write their names, and the name of your state, one under another on a sheet of paper. Copy the figures for each kind of work, as shown on page 241.

According to these figures, which of the four states is most like your state? What reasons can you suggest for the likenesses?

6. In the table on page 400, find the population and area of your state. Divide the number of people by the number of square miles. Your answer will tell you how many people there are in your state "per square mile."

7. You can use this table (p. 400) to compare your state with a thickly populated state, such as Massachusetts or Pennsylvania. To do this, divide the number of people in Massachusetts (or Pennsylvania) by the number of square miles in the state. Are there more people per square mile in your state, or in Massachusetts (or Pennsylvania)?

In the same way, you can find out how your state compares with a thinly populated state, such as Nevada or Utah.

You can also compare your state with a very large state, such as Texas or California.

8. According to the list of cities on page 399, are any of the world's large cities in your state? If so, which one, or ones?

How to Get An Understanding View of the State Where You Live

The following outline will be helpful to you in studying your state. For each topic you will want to use the maps or statistics or other materials which are suggested. You also should make use of those pictures and written materials in this book which are particularly concerned with your state.

In addition, you will need to use maps of your state and other reference materials in your classroom or school library. You may want to find out where you can write for booklets which tell about the land and people in your state.

A. THE NATURAL SETTING

1. *Elevation of the land and land forms.* Differences within the state. Plains, plateaus, hills, mountains. (Maps on pp. 230-231, 380-381)

2. *Kinds of soil.* Differences within the state. Is the soil fertile? Is it sandy? Is it stony? In what ways, in general, is it used? (Pp. 60-61)

3. *Rainfall.* Average annual rainfall. Average rainfall in particular months. Differences within the state. Relation of rainfall to the elevation of the land. (Map on pp. 372-373)

4. *Temperature.* Average monthly temperatures for January and for July. Differences within the state. Relation of temperature to the elevation of the land. (Maps on pp. 374-377)

Figure 242. Differences in work

Based on U. S. Census

The numbers show approximately how many in every 100 workers are engaged in particular types of work.

	Agriculture	*Manufacturing*	*Trade (Wholesale and Retail)*	*Transportation and Communication*	*Other Work*
ALABAMA	24	22	15	4	35
ARIZONA	15	9	22	5	49
ARKANSAS	35	14	16	4	31
CALIFORNIA	7	20	22	5	46
COLORADO	15	12	21	6	46
CONNECTICUT	3	43	17	3	34
DELAWARE	9	32	16	6	37
DISTRICT OF COLUMBIA	..	7	18	5	70
FLORIDA	12	11	24	6	47
GEORGIA	21	23	16	4	36
IDAHO	27	9	19	6	39
ILLINOIS	7	32	20	7	34
INDIANA	12	35	18	5	30
IOWA	29	15	19	5	32
KANSAS	23	13	19	7	38
KENTUCKY	26	16	15	6	37
LOUISIANA	17	15	19	6	43
MAINE	9	34	17	5	35
MARYLAND	6	25	19	6	44
MASSACHUSETTS	2	37	19	4	38
MICHIGAN	7	41	18	4	30
MINNESOTA	23	16	20	6	35
MISSISSIPPI	42	13	13	3	29
MISSOURI	17	22	20	6	35
MONTANA	25	9	19	8	39
NEBRASKA	30	9	19	7	35
NEVADA	11	5	20	9	55
NEW HAMPSHIRE	7	40	16	3	34
NEW JERSEY	3	38	18	5	36
NEW MEXICO	18	6	19	6	50
NEW YORK	3	30	21	6	40
NORTH CAROLINA	25	28	14	3	30
NORTH DAKOTA	44	3	18	5	30
OHIO	7	37	18	6	32
OKLAHOMA	21	9	20	4	46
OREGON	12	23	21	6	38
PENNSYLVANIA	4	36	18	6	36
RHODE ISLAND	2	44	18	3	33
SOUTH CAROLINA	26	28	14	3	29
SOUTH DAKOTA	41	5	18	3	33
TENNESSEE	22	21	17	5	35
TEXAS	16	14	21	5	44
UTAH	12	12	20	7	49
VERMONT	18	25	16	5	36
VIRGINIA	15	21	16	6	42
WASHINGTON	9	21	21	6	43
WEST VIRGINIA	10	19	16	6	49
WISCONSIN	19	31	17	4	29
WYOMING	21	6	17	10	46

5. *Rivers, lakes, oceans.* Their location. How they are used. (Map on pp. 230-231)

B. HOW MEN USE THE NATURAL RESOURCES IN YOUR STATE

1. *Hunters, trappers, fishermen.* Where they live. How they work. How they market their catch.

2. *Ranchers and herders.* Where the grasslands are (if any). How men make a living from them.

3. *Farmers.* Where different crops are grown within your state. (Maps on pp. 75-84) A study of selected farms, using the check list on pages 74-75.

4. *Forest workers.* Location of forests. How men make a living from them. (Maps on p. 127) Locate, too, national forests, if any. (Map on p. 134)

5. *Miners.* Mineral resources, including oilfields (if any). Where they are. How men make a living from them. (Map on p. 139)

C. HOW MEN MAKE A LIVING IN THE TOWNS AND CITIES OF YOUR STATE

1. *Where they are.* Parts of the state that have the most towns and cities. Some reasons why.

2. *The urban workers.* Outstanding types of work in the towns and cities. Kinds of manufacturing (pp. 164-166). Kinds of trade (pp. 178-182). Special services (pp. 203-215).

3. *A study of selected cities in your state.* Use the check list on pages 162-163 to make a study of the largest two or three cities in your state, your state capital, and your home community.

4. *The relation between urban workers and rural workers in your state.* Show how each group depends on the other.

D. THE TRANSPORTATION NETWORK

1. *Important routes within your state.* Waterways, railroads, highways, air routes. Some reasons why these routes are located where they are. Who the workers are. The ways in which they work.

2. *Relation of these routes to transportation routes outside your state.*

E. HOW THE STATE WHERE YOU LIVE DIFFERS FROM OTHER STATES

1. *Area, population, number of big cities*—capitals or cities having a population of 500,000 or more. (Statistics on pp. 399 and 400)

2. *Differences in work.* (Maps on p. 238 and statistics on p. 241)

3. *Ways in which your state is outstanding.*

4. *Advantages of living in your state.*

F. TOOLS FOR DISCOVERING INFORMATION ABOUT YOUR STATE

1. *Maps, statistics, and pictures in this book.* Make a list of those which tell about the land or people in your state.

2. *Other materials.* List the names of reference books, newspapers, or magazine articles that give valuable information about your state.

The Transportation Network

Specializing. It is clear from the story of how the states differ that each state and each region has its own specialty in work, in spite of certain general similarities. Rhode Island specializes in manufacturing, while North Dakota and Mississippi specialize in agriculture. Even within agriculture itself, there are specialties that go with different regions, as you read in the unit on farming in the United States (pp. 75-88). The farmers of the corn belt, for example, concentrate on growing corn, while certain farmers in Florida plant most of their land to celery.

This specialization is possible only because of the connecting links that tie our country together—the waterways, railroads, highways, and airways, described in a general way on pages 184-201. These vital lifelines of transportation make it possible for goods to flow freely from one section of the land to another. Each region can then do the work that is best for that area with its particular resources. And each region can get from other areas the goods in which those areas specialize.

Transportation—the connecting link. The picture on page 243 suggests how important

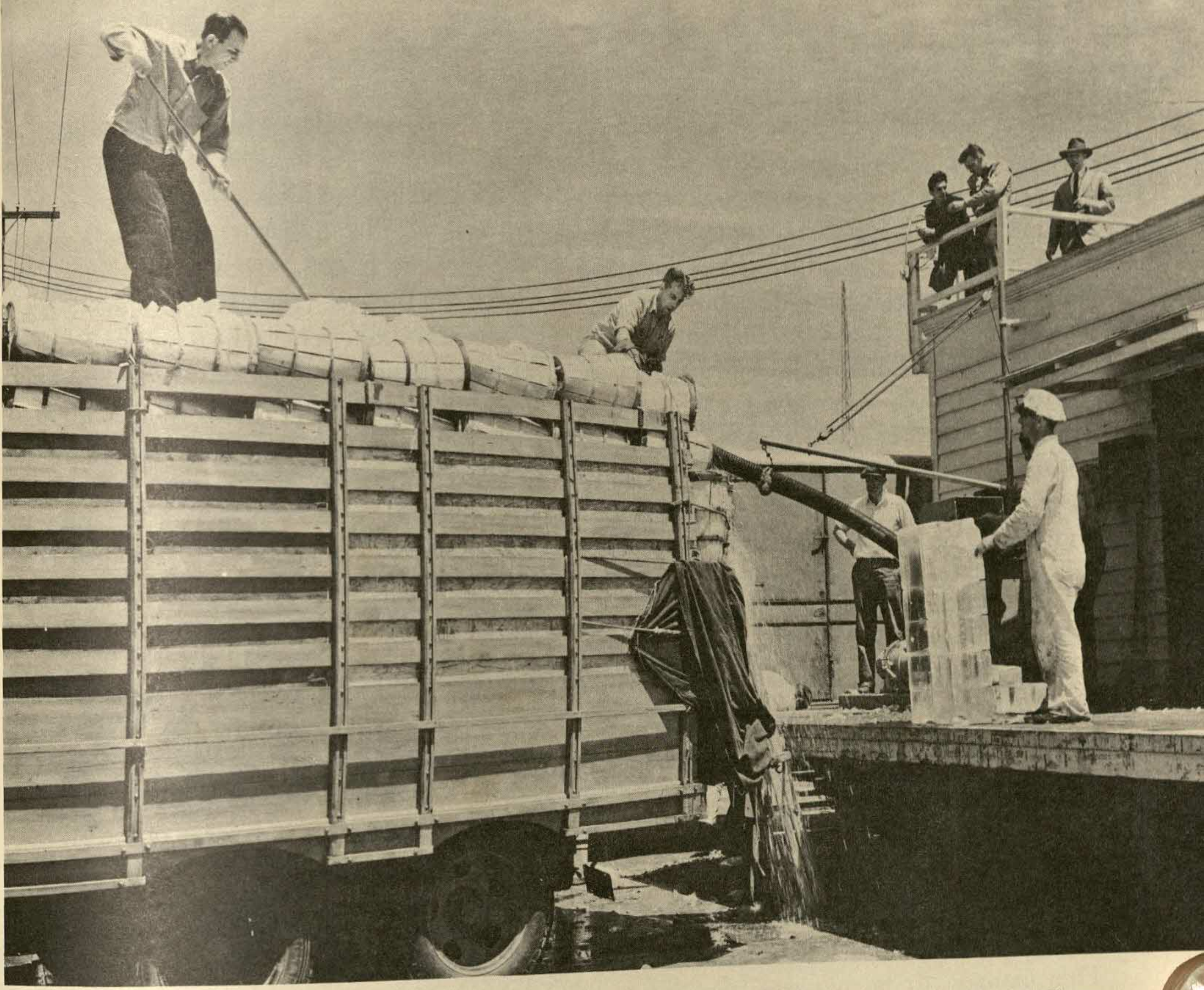


Figure 243. Keeping vegetables fresh on their way to market

© *Ewing Galloway*

transportation is to those Americans who work directly with natural resources. Here men are putting ice in a truck which will carry vegetables from Delaware to New York City markets. Without good transportation such as this, the farmers of Delaware could sell much less of what they produce. They could therefore buy less, and everyone would be worse off.

A similar story might be told of the hunters, trappers, fishermen, the ranchers and herders, the forest workers, and the miners. In each instance their work depends upon some form of transportation. Except for subsistence workers, this dependence on transportation workers is general throughout our land.

Transportation is equally necessary in our towns and cities, where raw materials pass from hand to hand on their long journey from original producer to final consumer. In fact, transportation is essential for the very existence of a city anywhere (p. 167). Of all the workers, urban and rural, none are more critically needed than those who maintain our transportation network.

The railroad giant. It is estimated that railroads may carry more than half of all the commercial freight and passenger traffic in the United States that moves by either land, water, or air. The map on pages 230-231 shows the major rail routes of the nation. Such a map cannot show all the routes, for there are nearly a quarter of a million miles of railroad in the United States.

As you can see by this map, the railroad lines are much more widely spaced in much of the West than in the East. The map on page 226 helps to explain this, for thinly settled ranch lands need fewer railroads than do thickly settled industrial areas.

On fresh water and salt water. In carrying passengers, railroads rank first, bus lines second, and air lines third. But in carrying freight, both the highways and airways are out-ranked by the waterways.

Of all our inland waterways, the Great Lakes waterway is by far the most important. These lakes have become an amazing water highway. The ports of the Great Lakes handle more tons of freight each year than all the ocean ports of the nation. More tons of freight pass between Lake Superior and Lake Huron each year than through the Panama Canal. By means of rivers and canals, the lakes are connected with each other and with the ocean. Occasionally, one may see a small ocean freighter, from perhaps Sweden or Brazil, unloading cargo at one of the docks in Chicago.

The location of the Great Lakes is in part responsible for their great usefulness to man. They happen to lie between the country's chief resources of iron ore and of coal (pp. 139-144). And great quantities of limestone are found along the shores of the lakes, particularly in Michigan. So the great bulk of the freight is iron ore moving eastward from Minnesota, coal moving westward from Lake Erie, and limestone moving both ways from Michigan. Both the iron ore and coal are hauled to the lake shore by rail.

It also happens that great wheat lands lie to the west of the Great Lakes, and the chief urban centers of the nation lie to the east. It is not surprising, then, that many millions of bushels of wheat also move eastward over this waterway. Many industrial cities have grown on the shores of the lakes themselves. And from these centers, many kinds of manufactured goods are added to the cargo of the freighters that travel on this great, interior, fresh water highway.

The chief river highways of the nation are parts of the Mississippi system. The navigable portions of this river system make a pattern which somewhat resembles a tree in winter, with barren, crooked branches. The bottom of the tree trunk is near New Orleans. The main branches reach to Knoxville, Tennessee; Pittsburgh, Pennsylvania; Chicago, Illinois; and Minneapolis-St. Paul, Minnesota.

If you wish, you can sail from the Gulf of Mexico northward almost across the United States, and then eastward to the Atlantic (pp. 230-231). At Chicago the Mississippi River system connects with the Great Lakes. In leaving Lake Erie you can turn into the Barge Canal at Buffalo, New York, go on to Albany, and then down the Hudson River to New York City. An alternate route takes you through a canal from Lake Erie to Lake Ontario, by-passing Niagara Falls. Then the road to the sea is open, by way of the St. Lawrence River and its canals.

The ocean is a highway not only for international trade and travel, but for traffic moving from one American port to another. This is known as coastwise trade or shipping. Some of the coastwise steamers go far out to sea, going through the Panama Canal, for instance, in order to carry goods between the eastern and western coasts of the United States. No foreign ships are permitted to engage in our coastwise trade.

One little known water highway in the United States is the Intracoastal Canal. Except for a short break in northern Florida, this water highway now reaches along the coast from New York to Corpus Christi, Texas (pp. 230-231). It is really a series of canals, which connect various bays and inlets along the coast.

Land, weather, and transportation. In an earlier chapter you read of *Land, Weather, and the Farmer,* pages 60-71. A similar story might well be written about land, weather, and transportation.

In dozens of ways transportation is related to the land. Every builder of railroads or highways must consider the land—whether it is level or mountainous, sandy or rocky. Canals cannot be dug easily through mountains. High waterfalls and swift rapids limit the use of some rivers as highways. Ocean ships can best unload their cargoes in harbors where quiet water is surrounded by land. Even air routes are earth-bound in that they must depend on adequate landing fields.

Weather, too, may help or hinder transportation. Storms at sea, fog in the air, ice on lakes and rivers, and snow and ice on the ground, all present problems. The picture below shows a snow plow opening the way for traffic after a snowstorm. This is an enormous task each winter in the northern states and in mountain areas. It is not exceptional for a state or a large city to spend millions of dollars each winter for this kind of work.

Helps in Learning

1. List the different kinds of transportation on which your community depends. Which kinds connect your community with other communities?

2. According to the map on pages 230-231, is your community in a part of our country where there are many, or few, main railroads?

3. Is your community near one of the principal river highways in the United States listed on page 244? Is it near an ocean highway?

4. There are few water highways in the western half of our country. What reason for this is suggested by the colors on the map of the United States? What reason is suggested by the rainfall map (pp. 372-373)?

5. On the map of the United States (pp. 230-231), show how iron ore moves eastward from Minnesota on the Great Lakes. Show how coal moves westward from Lake Erie. Show how

Figure 244. A winter problem

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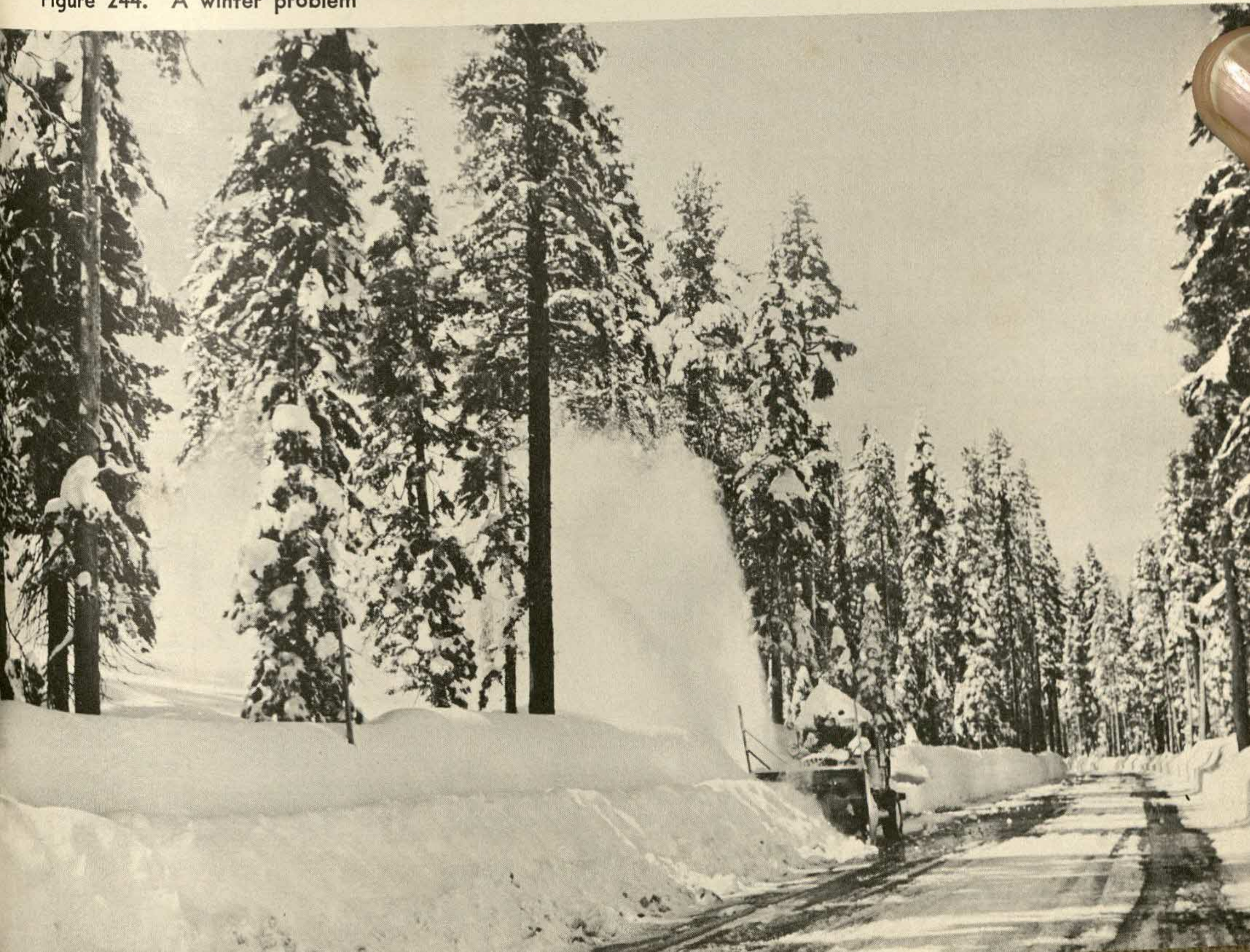


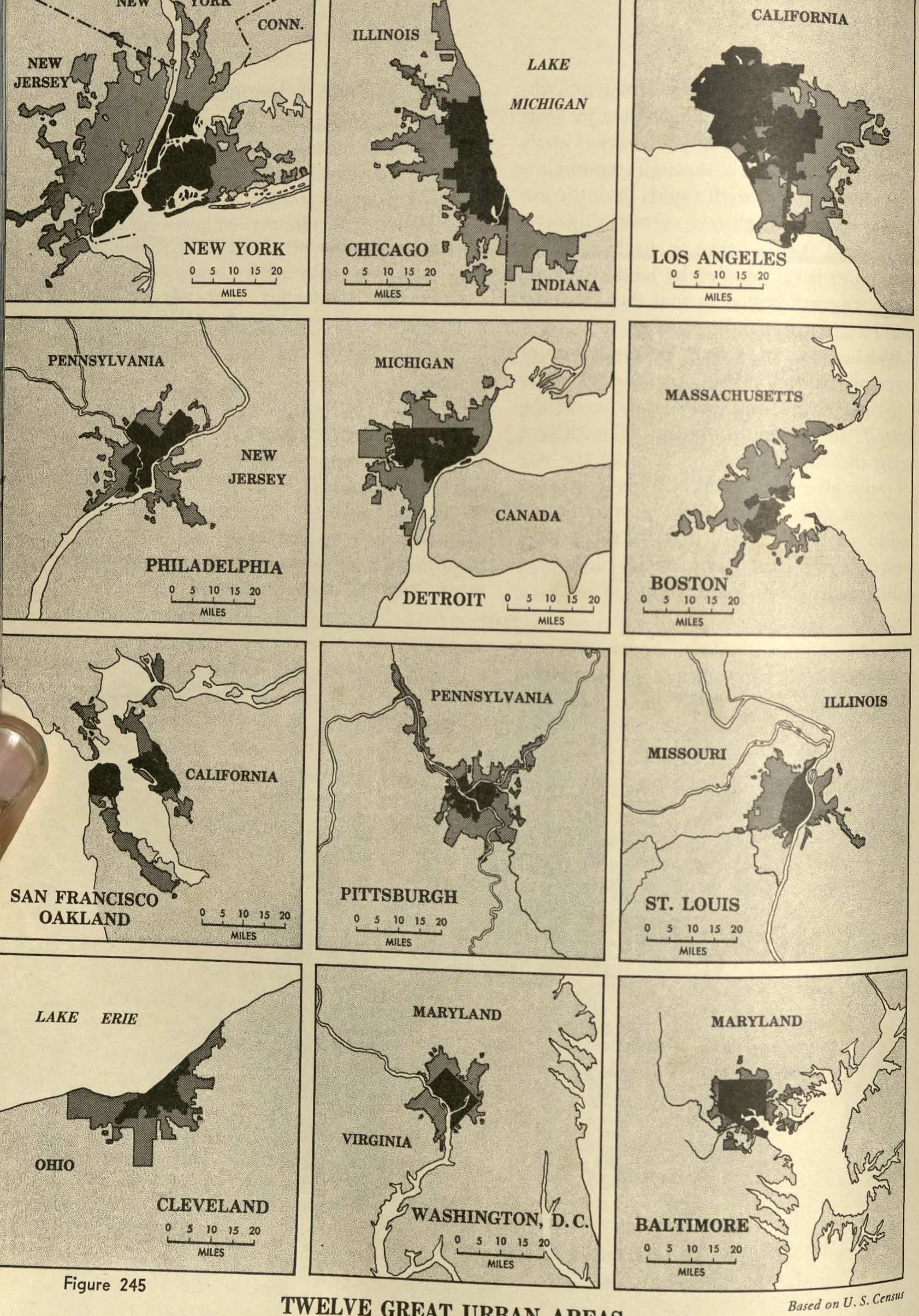


Figure 245

TWELVE GREAT URBAN AREAS

Based on U. S. Census

■ City proper

▨ Other land which is part of the urban area limestone moves both ways from the state of Michigan.

Natural Resources and Transportation

In the five chapters on the five great natural resources, you read of men who make a living directly from (1) the resources of animal life—birds, wild animals, fish; (2) natural grasslands; (3) the soil; (4) forest resources; (5) mineral resources.

Although these workers depend directly on natural resources, they also depend for a living on transportation. The following group of exercises will help you to see this clearly.

1. The men in the pictures on page 36 depend for a living directly on what natural resource? Find this resource in the right-hand picture.

When the ship loaded with iced fish returns to Gloucester, why is fast transportation to big city markets of vital importance to these men?

2. The herder of the sheep shown on page 43 depends directly on what natural resource? Find this resource in this picture. Find the herder's covered wagon. Although this man leads a lonely life, he depends for his living on railroads, roads, and trucks. Tell how.

3. The farmers in the pictures on pages 76, 77, 81, and 85 depend directly on what natural resource? Point to this resource in each picture.

4. In what form do the corn belt farmers (pp. 75-77) market most of their corn? How do they depend for a living on paved roads, trucks, and railroads?

5. How do the cotton pickers (p. 81) depend for a living on roads and railroads which connect the cotton-growing lands with textile mills in the South and North? Since much American cotton is used in English textile mills, how do these cotton pickers depend on ocean ships?

6. How do the California and Florida farmers (p. 85) depend for a living on fast transportation between their states and big city markets?

Why is *fast* transportation important to these farmers, but not important to cotton farmers?

7. The men in the picture on page 128 depend directly on what natural resource? Find this resource in the picture. Read again *Logging work* (pp. 128-129) and tell how these men depend for a living on trucks and railroads.

8. The men in the drawings on page 141 depend directly on what natural resource? Point to this natural resource in the drawings. These men also depend for a living on the work of the men shown on page 142. Tell how.

How do both groups of workers (pp. 141 and 142) depend on railroads *above* ground?

9. The workers in the mine (p. 143) and in the quarry (p. 146) depend directly on what natural resource? Point to the resource in each picture. How do these workers also depend on Great Lakes freighters?

10. Without some form of transportation, people who work directly with natural resources would live on a subsistence level. Explain why this is true. Why would most of us regard subsistence living as a very poor kind of life?

Twelve Great Urban Areas

Outstanding. The maps on the opposite page show twelve great urban areas in the United States. It is no mistake to call them great. In these 12 areas live about one-fourth of the American people. These areas are the nation's outstanding centers of manufacturing, trade, transportation, and special services. Everywhere in the country, the work of the people has some relation to work in one or more of these 12 great urban areas.

The boundaries shown on the maps are based on information from the United States Census. In each instance the urban area carries the name of the chief city or cities within it.

Various differences. These urban areas, as you would expect, are alike in many ways and different in many other ways. One would expect the *natural settings* to differ. Yet it is a striking fact that each of these 12 great cities is a port on an ocean, a lake, or a navigable river. For a longer, or shorter, time in the history of nearly all of these cities, the chief transportation routes have been water highways.

Obviously these urban areas differ in size, or area. All of the maps on page 246 have been drawn on the same scale, so they may easily be compared with regard to area. Clearly, New York, Chicago, and Los Angeles are among the largest in land area. Cleveland and Baltimore are among the smaller ones.

The pattern of *streets and buildings* is not the same in any two of these urban areas. Nevertheless, every one of them has towering buildings in a central business district, clusters of apartment houses, and so-called industrial, or manufacturing, districts. There are also outlying business and residential districts. Beyond the city proper, lie tens or even hundreds of closely spaced, smaller settlements. All are tied together by the network of transportation you know so well.

Every one of these 12 urban areas has excellent *connections* with the outside world by air, rail, highway, and water. In fact, good transportation has helped these cities to grow.

Differences in shape. There is an amazing variety of *shapes* on the 12 maps. No words can describe them as well as the language of the maps themselves. As you would expect, the shape of each city bears some relation to the natural setting. But there may be other reasons for the patterns on these maps.

The city proper of Los Angeles has a most unusual shape (p. 246). As you can see, the main part of the city lies in one, almost solid block beside the ocean. In addition, there is a long, narrow strip of land reaching south to another section of the coast. There is an interesting story behind this pattern.

Until about 50 years ago, Los Angeles was not a seaport. There was no usable natural harbor on the coast nearest the main section of the city. The port for Los Angeles was a town called San Pedro, 20 miles to the south. In order to get this port, the city of Los Angeles extended its boundaries southward in ribbon-like fashion, made San Pedro a part of the city, and there built one of the best ports in the country.

A range of mountains rises like a wall to the north of Los Angeles. Largely on this account, the urban settlement has not spread far in that direction.

The Chicago urban area is shaped somewhat like a half-moon. The cluster of settlements reaches for more than 50 miles along Lake Michigan, from Waukegan, Illinois, through Chicago proper, to Gary, Indiana. The map of the Cleveland urban area looks much like the Chicago map, except that the half-moon is turned on its side. Both Chicago and Cleveland are port cities on the Great Lakes, and the pattern of each city conforms somewhat to the shape of the lake shore.

The shape of the Pittsburgh urban area (p. 246) reflects both the nature of the land and the work of the people. As you will note, the urban settlement has spread chiefly along the rivers. One reason is that in this hilly land railroads tend to follow the river valleys. Also, the rivers are highways for hundreds of coal barges and for boats carrying other freight. The coal from many drift mines (pp. 140-141) can be loaded into barges almost at the entrances to the mines.

Differences in work. Some of the chief contrasts between the "big 12" urban areas are in work. Here, as in every city, there are many workers in trade, transportation, and the special services.

There are people engaged in manufacturing, also, in every urban area. No city is without the manufacture of food, for instance, or some printing and publishing. But the per cent of the employed people engaged in manufacturing varies widely. And the relative importance of certain types of manufacturing differs greatly from one urban area to another. In many instances, differences in manufacturing call attention to basic differences in the natural settings of two or more cities and the resources upon which they draw.

The following list shows the relative im-

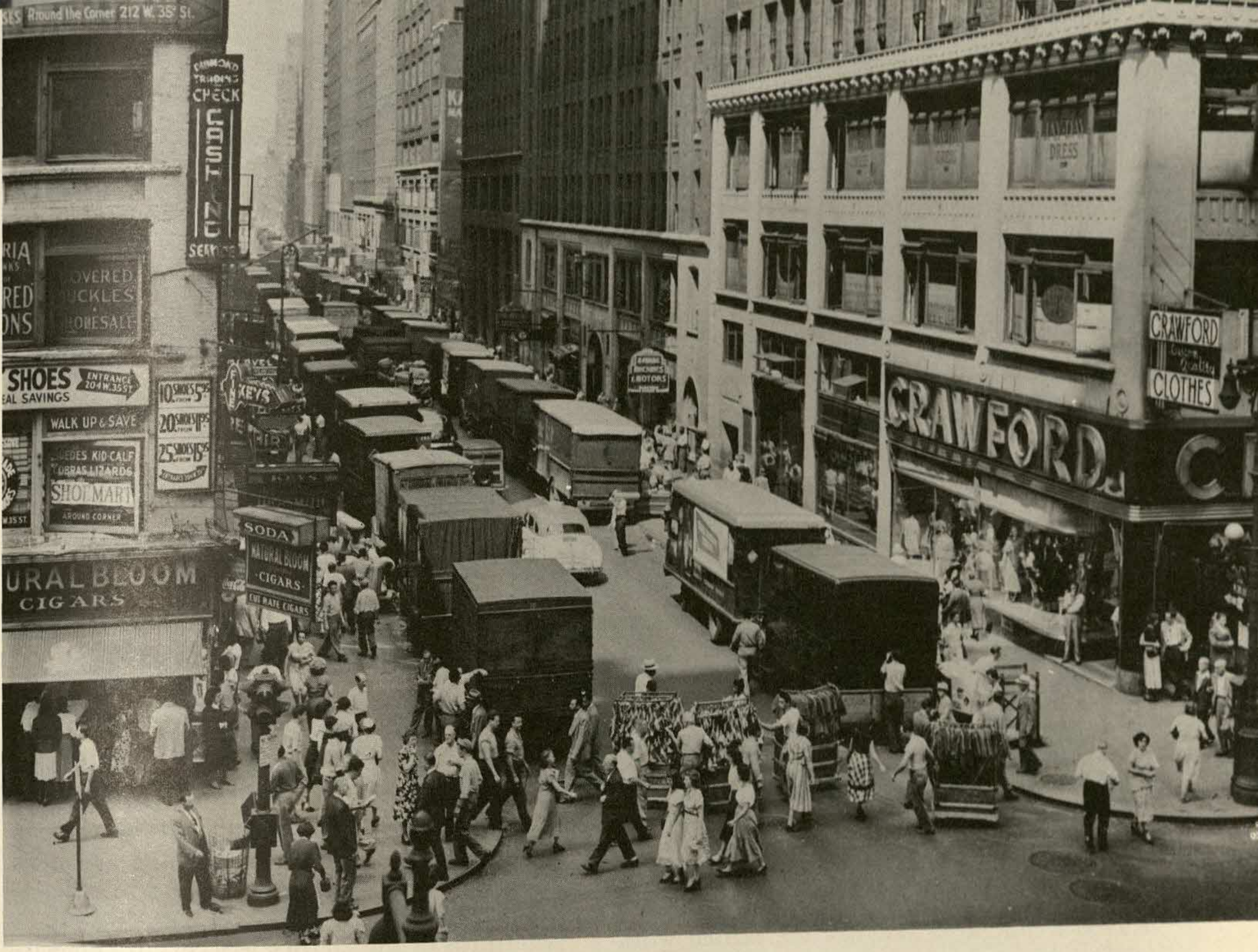


Figure 246. In the New York garment district

© *Ewing Galloway*

portance of manufacturing in these 12 great urban areas. It does not distinguish between the kinds of manufacturing to be found in each urban area.

Urban Areas	*Per Cent of Workers in Manufacturing*
NEW YORK	31
CHICAGO	38
LOS ANGELES	26
PHILADELPHIA	36
DETROIT	47
BOSTON	29
SAN FRANCISCO-OAKLAND	19
PITTSBURGH	38
ST. LOUIS	34
CLEVELAND	41
WASHINGTON, D. C.	7
BALTIMORE	31

The New York urban area. The manufacturing specialty of the New York urban area is clothing. The clothing industry alone employs about one-fourth of all factory workers in the area. No other industry in this urban area has half as many workers.

The interior of one clothing factory is shown on page 171. The picture above shows a street in the so-called garment district on Manhattan Island, in the heart of New York City. Within a mile or two of this place, you can find the factories that produce about half of the ready-to-wear clothing sold in the entire United States. Obviously, no other urban area in the country can compare with New York as a clothing center.

New York has certain advantages over other areas in the manufacture of clothing. For years, this city has been the great land-

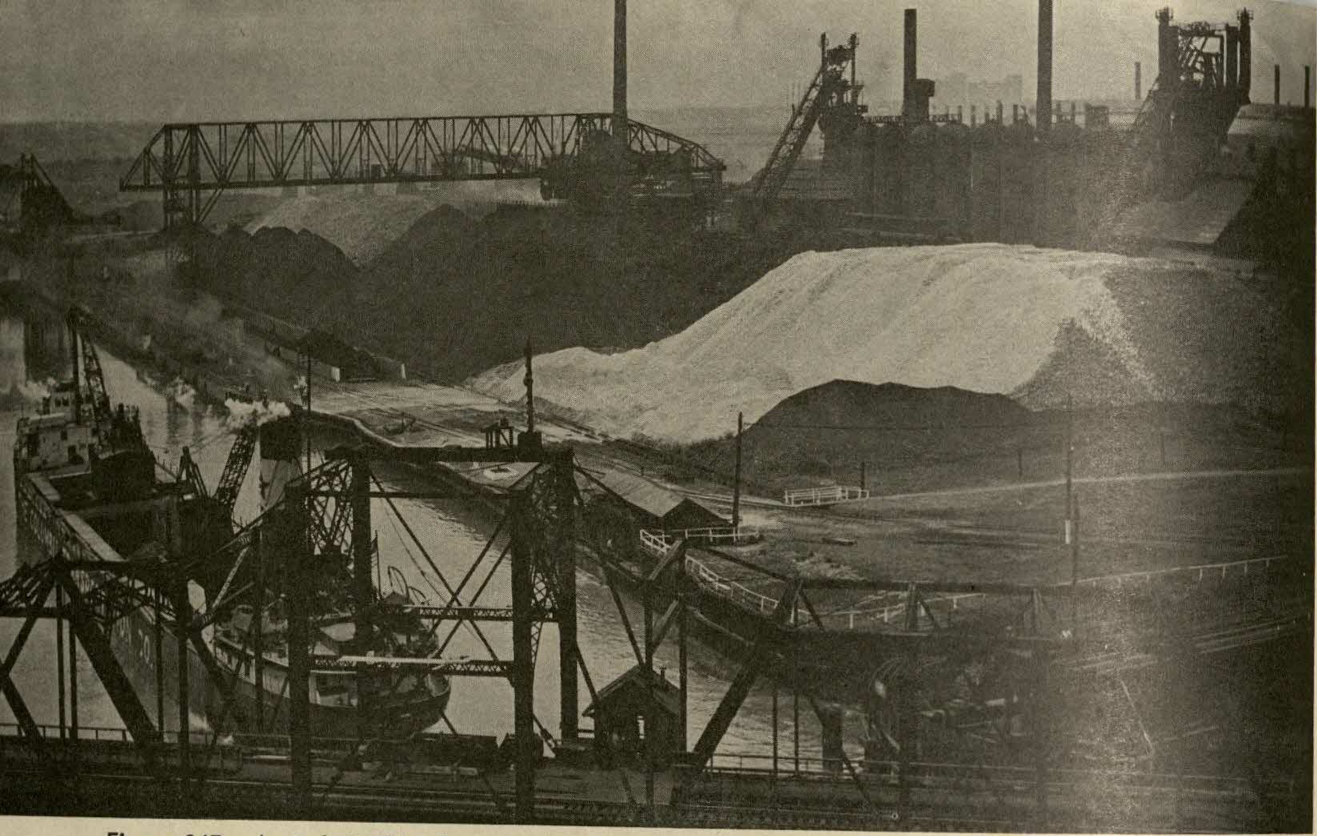


Figure 247. An industrial landscape in the Cleveland urban area

© *Ewing Galloway*

ing place for immigrants, many of whom stayed in the area and became skilled workers in the clothing industry. As the manufacture of clothing requires little space per worker, it is well suited to the very crowded heart of the city, a crowding which is clearly suggested by the picture. The New York urban area is the single greatest market for clothing in the country. New York is, also, an outstanding style center.

This emphasis on the manufacture of clothing must not hide the fact that there are thousands of other industries in the New York urban area. It is the country's greatest center of printing and publishing, and one of the outstanding centers of chemical manufacturing, to mention only two. Yet in number of workers, each of these ranks below the manufacture of clothing.

Detroit, an automobile manufacturing center. As you can see by the list on page 249, nearly half of the workers in the Detroit urban area are engaged in manufacturing. This is unusual for any city in the country. Furthermore, this area is exceptional in that almost two-thirds of the factory workers are engaged in manufacturing automobiles or automotive equipment. No other major city in the country has so large a per cent of its workers in one type of industry.

Detroit's location is an advantage for this kind of manufacturing. Detroit is located on the Detroit River which is, as you know, a connecting link in the Great Lakes waterway. There is no important mining of coal near Detroit (p. 226), but heavy raw materials, including coal, iron, and steel, can move easily and cheaply to Detroit by water.

The actual location of the automobile industry in the Detroit area was largely accidental. Other cities on the Great Lakes have equal advantages in transportation. Detroit, however, happened to be the home of Henry Ford, the pioneer builder of automobiles, and the inventor of the mass production assembly line shown on page 174.

Cities of "iron and steel." In four urban areas, Pittsburgh, Chicago, Cleveland, and

Baltimore, the outstanding type of manufacturing is the making of iron and steel.

Pittsburgh was the first of these to develop. In pioneer days, both iron ore and coal were mined near-by to supply the local trade. Today this is the greatest iron and steel center in North America.

Most of the iron ore now comes from Minnesota instead of from the surrounding territory. But the hills and valleys of much of the area surrounding Pittsburgh are dotted with coal mines.

The pictures of various steps in making iron and steel (pp. 172, 173) were taken in the Chicago area. Neither the iron ore nor the coal is mined near Chicago (p. 226), but the excellent transportation routes bring them cheaply from a distance. As you will recall, the huge lake boats shown in the picture at the bottom of page 190 are carrying freight of this kind to the Chicago area.

Many of the iron and steel products made in the Chicago area are used in the Middle West. The many railroads in this area themselves provide a vast market for iron and steel products, steel rails, for example. And the modern farmers of the region need great amounts of machinery.

The picture on page 250 suggests the chief kind of manufacturing in the Cleveland urban area. Its advantages for making iron and steel resemble those of both Pittsburgh and Chicago. The coal-producing regions of the Appalachians are not far away. And iron ore from Minnesota, and limestone from Michigan, can reach the city by cheap water transportation.

The Baltimore urban area is the only seacoast center in the nation which is outstanding in making iron and steel. Coal is available in the near-by Appalachians. But the Minnesota and Alabama iron mines are far away. So Baltimore imports iron ore from Chile and from Cuba. A seacoast location and cheap ocean transportation, then, have much to do with manufacturing in Baltimore.

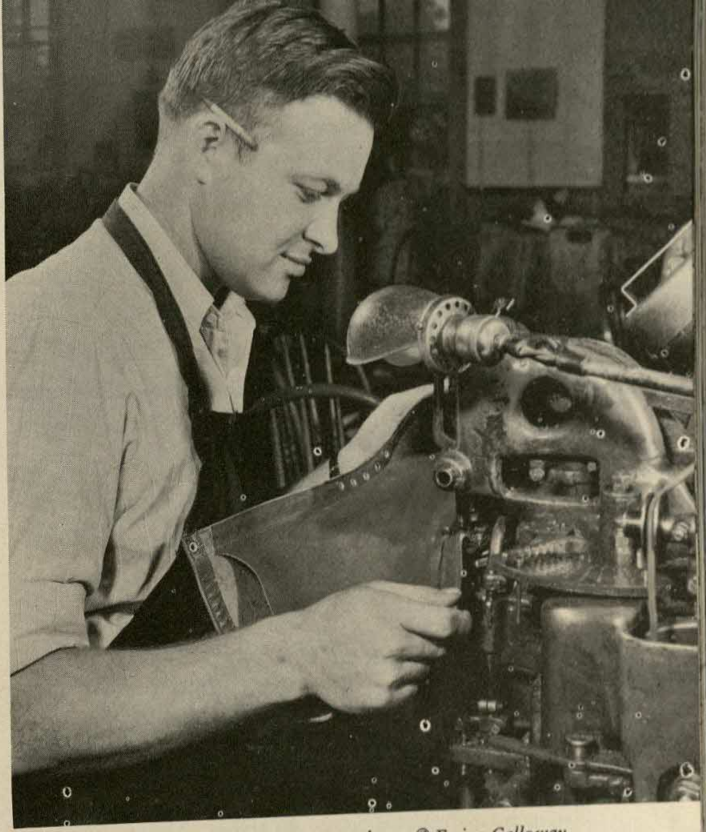


Figure 248. Making leather goods © *Ewing Galloway*

Two Atlantic ports. Philadelphia and Boston are two great seaports on the Atlantic. One faces a river deep enough for ocean ships, and the other is located beside an excellent ocean harbor.

Philadelphia has so many different kinds of manufacturing that we associate no one product with its name, as, for example, we associate automobiles with Detroit. Within the Philadelphia urban area, factories turn out almost everything from socks, radios, and canned soup to locomotives. There are shipbuilding yards, sugar refineries, and flour mills. Textile manufacturing employs slightly more workers than any other industry in the urban area.

The picture above tells of the foremost manufacturing industry in the Boston urban area—making leather goods, particularly shoes. The shoes made in this area each year are counted in the tens of millions of pairs. There are also specialties within this specialty. One factory may make nothing but heels, another the insoles, and so on. In terms of the number of workers employed in the Boston urban area, the manufacture of machinery is second in importance to the manufacture of shoes.

How can you explain the concentration here of leather manufacturing? Part of the answer is that years ago Boston became a great market for hides and skins, and has not lost its leadership. At the docks in Boston you can see cowhides from Argentina, goatskins from North Africa, and sheepskins from Australia.

Other urban centers. In two of these 12 urban centers, San Francisco-Oakland and St. Louis, the chief manufacturing specialty is food. Both cities draw much on the rich farmlands that are adjacent to them. As you would expect, therefore, this kind of work in the San Francisco-Oakland area depends much on fruits and vegetables. Meat packing, canning, and flour milling are important in the St. Louis region.

In the Los Angeles urban area the making of transportation equipment is more important than any other type of manufacturing. This means chiefly the assembling of automobiles and the making of airplanes. The making of motion pictures, in Hollywood, is a world-famous specialty of this region. Yet in number of people employed, it is far from the top of the list.

Washington, as you have seen, is a great center of government work. It has little manufacturing.

Helps in Learning

1. Do you live in one of the largest 12 urban areas in the United States? If so, do you live inside, or outside, of the "city limits" of the biggest city in that urban area?

Name some communities outside the limits of the biggest city, but inside the urban area.

Find the approximate location of your neighborhood on the map of the urban area where you live (p. 246).

2. A part of Los Angeles, in the Los Angeles urban area, is known as "the shoestring." Find it on the map (p. 246). Why is "the shoestring" a good name for it? What two important parts of the city does this shoestring connect?

3. As you have learned, the shapes of the cities and of the urban areas differ greatly. This is true of all communities, large and small. Draw a simple outline map of the shape of your own community, the way you *think* it is. Print the names of the roads or streets which form some of the boundaries.

If possible, get a map of your community and compare it with the outline maps drawn by members of your class. Which outline map is most like the shape of the real community?

What reasons can you suggest for the shape of your community? Is its shape related to the natural setting? If so, how?

4. What things shown in the picture on page 249 suggest New York's single greatest industry? How does the enormous population of the New York urban area help to explain why New York is the greatest clothing-manufacturing center in the country?

5. List the makes of all the automobiles you have seen, and the name of the place where each is manufactured. Which ones are made in or near Detroit?

6. The pictures on the page opposite show some of the things exported from the United States. In what part of the country might each product have been produced?

Our Foreign Trade

How to measure it. The maps on pages 254-255 show the chief places where we sell our goods abroad, where we buy them, and comparatively how much in each case. These maps do not show the trade with any countries which represent less than one per cent of our exports or imports.

These maps, of course, could be made only after we had measured our foreign trade. This, however, is not an easy thing to do. First of all, should international trade be measured according to weight or value? Another problem grows out of the fact that maps like those on pages 254-255 must show a general picture, not that of some particular month or year. We know that one year's trade, for example, may differ somewhat from another, because of crop failures, changed prices, war, and other things.

The greatest interruption to international trade in recent times was World War II. These maps of exports and imports, therefore, do not represent trade during any of the war years. They are based instead on an average of several years before the war, with adjustments which take into account developments in trade since the war. In each case, trade is measured in terms of value, not weight. The value of goods seems to represent more clearly their importance to the people who are buying and selling them.

Where do we sell? The map on page 254 tells us, in general, where we sell goods. Canada now takes several times as much as any other country. Europe, also, is very important. Scarcely one-fifth of our exports go to Africa and Asia, where more than half of the people in the world live. And South America ordinarily takes about one-tenth of them.

What do we sell? It would require many pages to list all the goods that we sell. But the pictures on this page show the leading three exports—machinery, grain and grain products, and raw cotton. In the upper picture, tractors are waiting to be loaded on an ocean freighter. The middle picture shows bags of wheat flour being hoisted to a ship. The picture at the bottom shows raw cotton being brought to a ship at a port in the South.

Following these three on the list of exports are automobiles, buses, trucks, and tractors, coal and petroleum products, products of iron and steel mills, chemicals, and textiles. Farther down the list are such varied items as wood and paper, rubber products, and vegetable oils.

Where do we buy? Western Europe and Canada are also outstanding on the map of imports (p. 255), but not nearly to the same

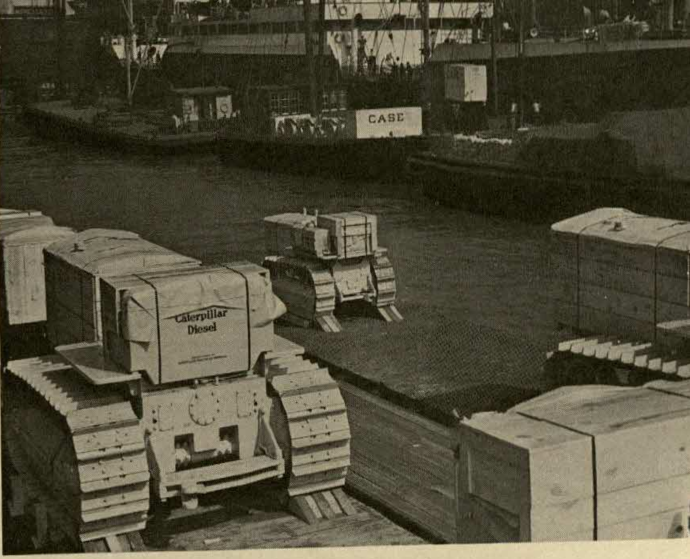


Figure 249. Machinery for export © *Ewing Galloway*

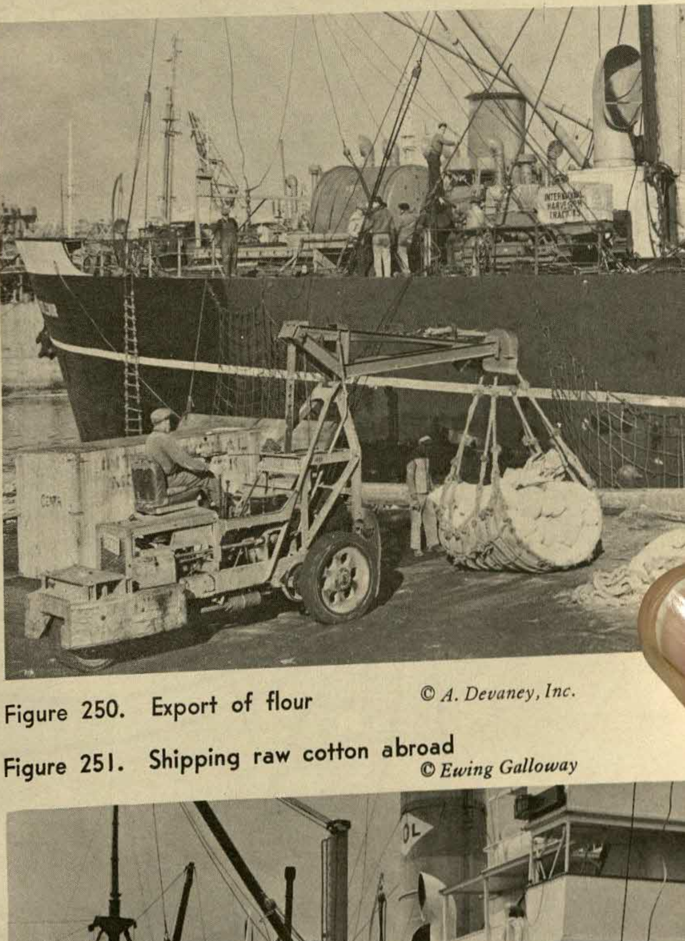
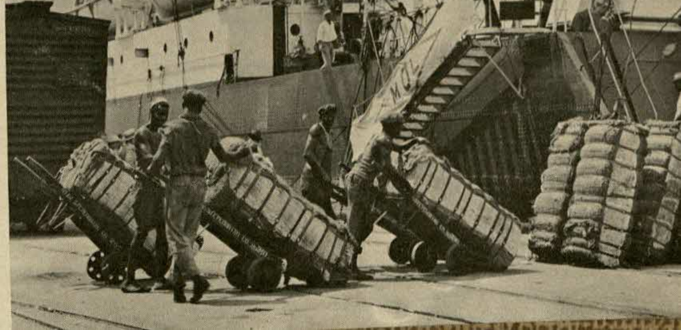
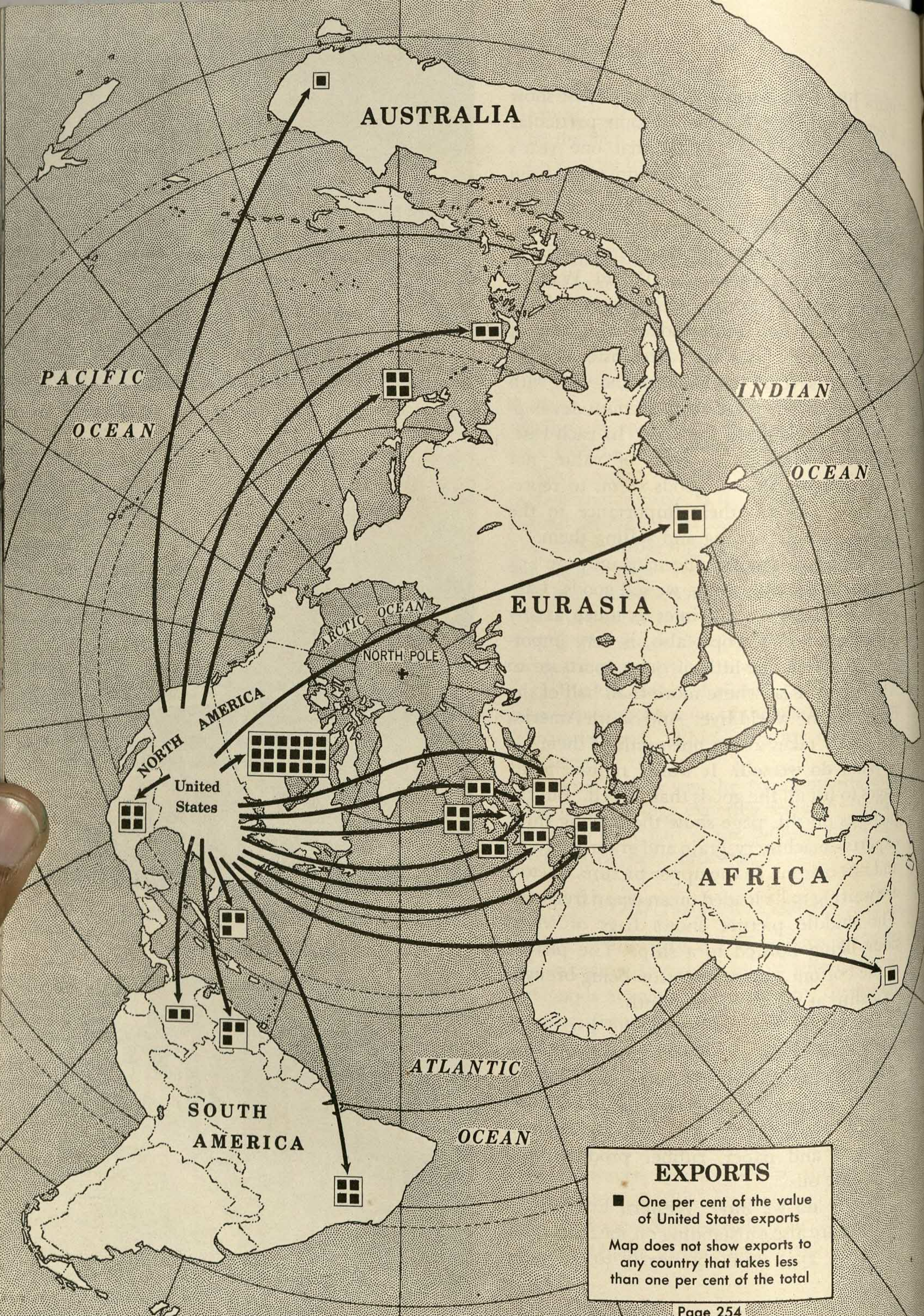
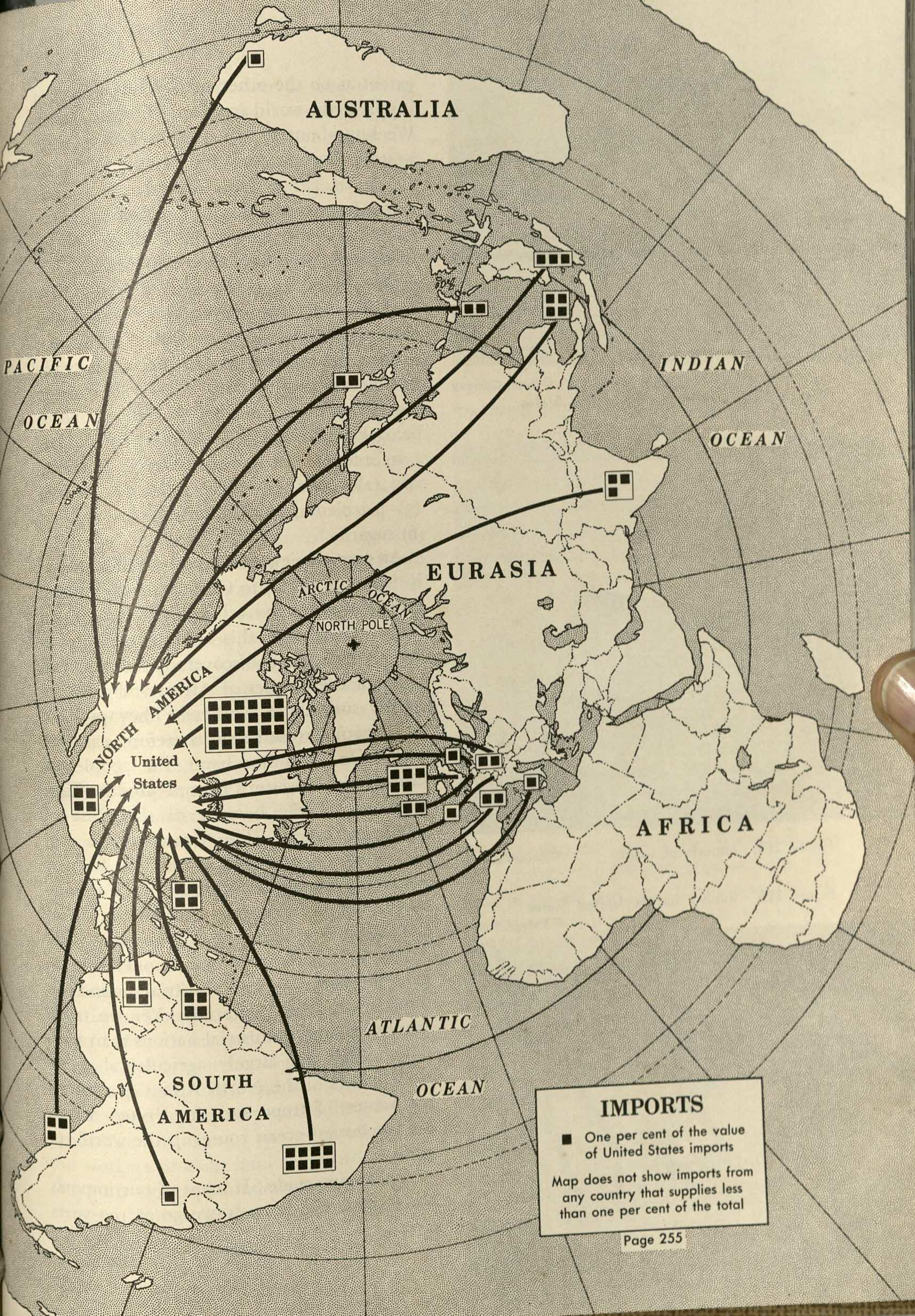


Figure 250. Export of flour © *A. Devaney, Inc.*

Figure 251. Shipping raw cotton abroad © *Ewing Galloway*




AUSTRALIA
PACIFIC
OCEAN
INDIAN
OCEAN
ARCTIC OCEAN
NORTH POLE
EURASIA
NORTH AMERICA
United States
AFRICA
ATLANTIC
OCEAN
SOUTH AMERICA
EXPORTS
■ One per cent of the value of United States exports
Map does not show exports to any country that takes less than one per cent of the total

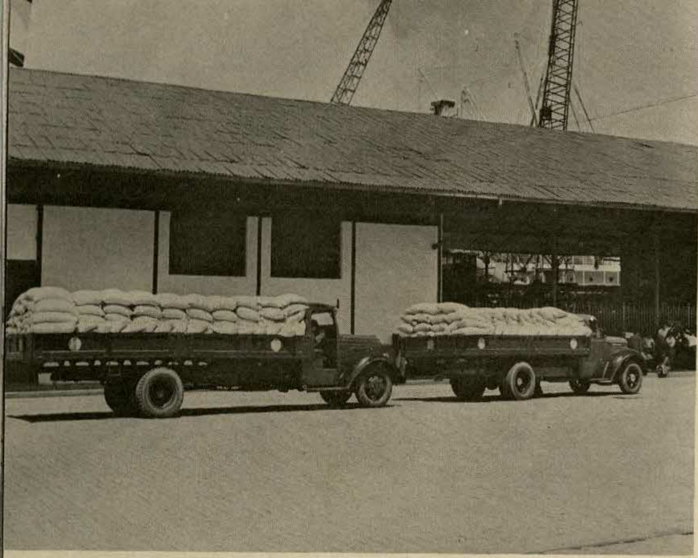


IMPORTS

■ One per cent of the value of United States imports

Map does not show imports from any country that supplies less than one per cent of the total

Page 255



© *Ewing Galloway*

Figure 254. Coffee for the United States

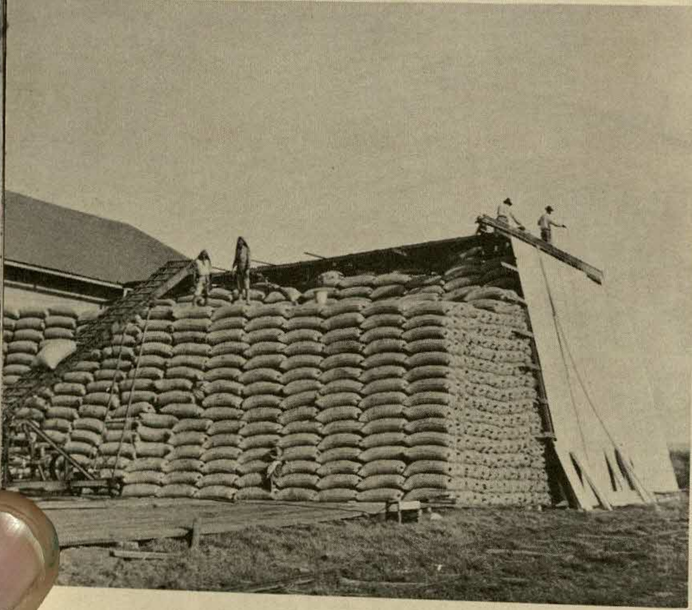
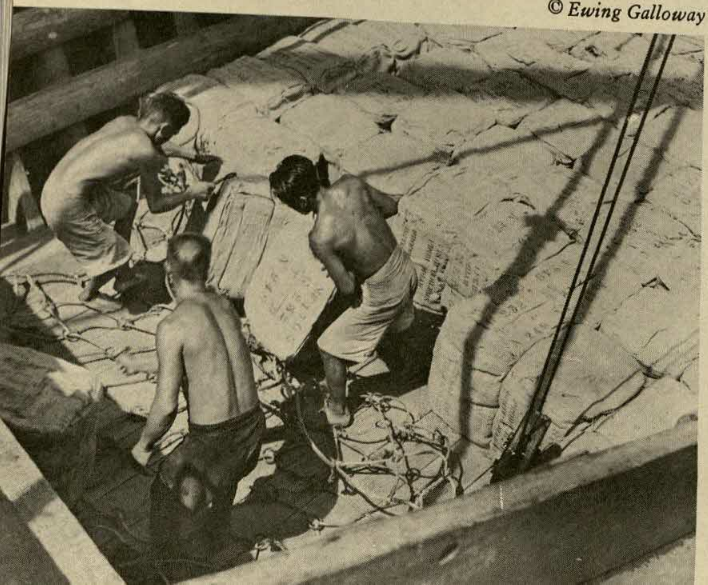


Figure 255. Imports of sugar © *Ewing Galloway*

Figure 256. Rubber for the United States
© *Ewing Galloway*



extent as on the other map. Our sources of supply in the world are more widely scattered. We buy about as much from Asia as from western Europe, and almost as much from South America as from Canada. Our trade with Africa and Australia is not great, as the maps show.

What do we buy? Our imports, like our exports, could make a long list, indeed. Three important argricultural imports are shown in the pictures on this page—coffee, sugar, and rubber. The coffee in the picture is ready for export from Brazil. The sacks of cane sugar are waiting in Cuba. And the rubber is being loaded on a ship at a port in Malaya.

In order of importance, our leading imports are: (1) coffee, cocoa, and tea, (2) metals, (3) petroleum, (4) rubber, (5) paper, and (6) sugar.

An over-all view. Clearly the United States is tied more closely to Canada and to western Europe than to any other lands. When you stop to think of it, this really is not surprising. As you have discovered, the vast majority of the peoples of Africa and Asia are largely subsistence workers. They produce little surplus to sell and, therefore, can buy little. On the other hand, the peoples of Canada and of western Europe produce huge surpluses, chiefly because of their use of power machinery. The United States' foreign trade has averaged as much as $120.00 for each person in our country. The foreign trade of China averages less than one dollar for each person living in that country.

One bold fact, then, stands out with regard to trade. As an industrial nation we import many raw materials. Yet we trade *more* with other industrial nations than with those which are largely agricultural. The trade routes of the North Atlantic, connecting western Europe and the United States, are the busiest ocean routes in the world (p. 378).

A changing trade. If maps of our imports and exports had been drawn 50 or 100 years ago, they would be similar in one way to today's maps. In 1821, for instance, we sent about the same per cent of our exports to western Europe. Then, as now, western Europe also was the chief source of our imports, although a larger part of our imports now come from other parts of the world.

Though western Europe has remained our chief customer and source of supply, there have been great changes in the kinds of things that we trade. In 1821, more than two-thirds of our exports to all lands were raw materials, particularly cotton, wheat, lumber, and tobacco. Now, more than half of our exports are finished manufactured goods. We continue to export cotton, wheat, lumber, and tobacco, but the products of our factories far over-shadow them today.

Similar changes have occurred in our imports. In 1821, more than half of what we bought abroad was some kind of finished manufactured goods. Now, scarcely a fifth of our imports belong in that class.

These changes in foreign trade correspond to changes in the occupations of the American people, described on pages 233-234. Changes both in types of work and trade are part of the great story of America's growth from an agricultural to an industrial nation.

World specialization. Earlier in this chapter you read how different states and urban areas specialize in one type of work or another. This story may be extended to the entire world. American farmers grow cotton for export, while Malayan farmers grow a surplus of rubber. As a whole, American workers specialize more in manufacturing than in agriculture, while most of the workers in India are farmers.

The chief reason for this specialization is that the people, tools, and resources of each country are not equally well suited for the production of every type of product. So the workers of each land specialize in what they can do best, under existing circumstances. Malaya is much better adapted for growing rubber than is any part of the United States. And the United States is far better equipped to make machinery out of the necessary raw materials than is Egypt, for example. It seems sensible, then, that each nation and region in the world should do the work for which it is best fitted, considering both its particular advantages and its disadvantages.

If each country in the world tried to make itself self-sufficient, all countries would be less well off. In every country, people would either be wasting time and money in producing things for which their land was not suited, or they would be compelled to do without certain things which they could not produce in their own land. It is fortunate, then, that the people of different countries have learned not only to make things for themselves but to trade back and forth across the face of the earth.

The United States in the World

A picture of strength. Chapter by chapter, you have been gathering facts about the United States. There were stories of the fishing fleets along the coasts, the wide ranch lands in the West, the rich farm lands, the forests, and the enormous wealth in mineral resources. You have seen, also, the clusters of great cities, the great network of transportation routes, the busy factories, and the millions of skilled workers. If you now put all these together, you will get a picture of very great strength. No other nation on the earth has such a combination of natural resources, great cities and industries, and skilled people. No other nation produces so large a quantity of useful things for its people.

It is true that as a nation we lack certain things. You will recall that we need to import coffee, sugar, and rubber, for instance. These needs are small, however, in comparison with our great wealth, and in comparison with the things that most other countries lack.

A picture of prosperity. As a people, Americans are not blind to the fact that progress has been uneven in our land. Not all persons enjoy equal wealth, comforts, and conveniences. There are slums in cities, and poor homes in towns and villages. At times, millions of Americans have been out of work. Yet the people as a whole are more prosperous than those of any other major country. They make more money, eat better foods, have greater opportunities. In terms of a world view, ours is a land of plenty.

A picture of confidence. Partly because of our strength and our prosperity, and partly because of our success in changing a wilderness into a land of farms and factories, Americans in general are very sure of themselves. Certainly they seem more confident than the people of most other lands. Perhaps these other people have had more experience with trouble and tragedy. Americans seem to take for granted that each generation will have a better life than the one before. Many people in other lands hope only that their children do not have a worse fate than theirs.

This self-confidence may be one reason why Americans are frequently criticized abroad for thinking that they can solve any problem, and solve it in a hurry. Of course, not all Americans think that way. They know as well as the Europeans do, for example, that some of the world's problems cannot be solved in a month or a year or ten years. Yet our confidence seems to compel us to try to solve them quickly.

Learning interdependence. When the first European settlers came to America, it seemed that they were going to the ends of the earth. And once they were here, it seemed to matter little to them what happened back across the ocean. For years, many Americans continued to think this way, although the world was shrinking, year by year (p. 188).

Now more than ever, they are learning that nations, like workers, are interdependent. The export and import trade shown on pages 254-255 is itself an illustration of this interdependence.

Helps in Learning

1. Which map, on pages 254 and 255, shows where we *buy?* Which shows where we *sell?* What does each square stand for?

2. On the map of exports, point to the parts of the world where we have good customers. One of our best customers is a near neighbor. What country is it? One of our best customers is an island country. What is it? Which continent (not counting North America) is our best customer?

3. Many people in the world think of *us* as customers. On the map of imports, point to countries that do a big business with the United States. What striking likenesses do you notice between the map of exports and the map of imports?

4. What three things head the long list of different kinds of goods that we *sell* to people in other countries? What are the leading three items that we *buy* from other people?

5. What is one reason why we have a huge foreign trade with Canada and western Europe? What is one reason why we have a much smaller foreign trade with the peoples of Africa and Asia? Is our foreign trade mostly with agricultural countries, or industrialized nations?

6. We live in a changing world. Trade, along with everything else, changes. One hundred years or so ago, what kinds of things were Americans selling to people in other countries? In what ways has our foreign trade changed? You can see signs of changing trade, in a small way, in your own community. What things now sold in stores in your community were not commonly sold there five or six years ago? What reasons can you suggest for the changes?

7. "Without some specialization in the world, everyone would be poorer." Do you think this is true? Tell why. American workers as a whole specialize in which of the following kinds of work: farming, ranching, manufacturing, mining?

8. Why should Americans keep in mind that nations, like workers, are interdependent?

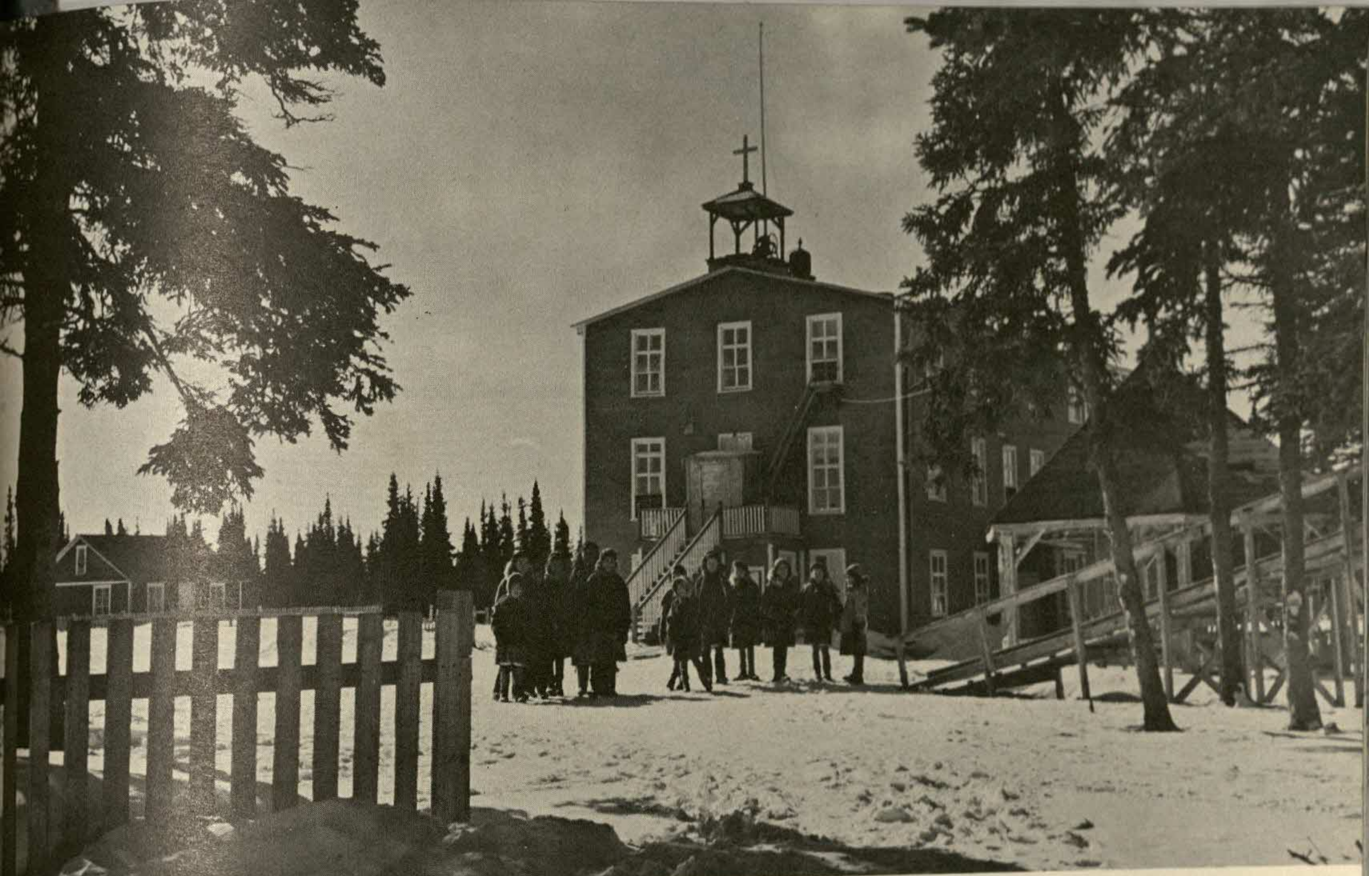


Figure 257. A school in the North

© *European*

Canada—Alaska—Greenland

Northlands. The map of North America, page 382, shows that Canada, Alaska, and Greenland are the northlands of the North American continent. Each of these lands reaches within the Arctic Circle. In each, winter brings bitter cold and snow, of which the picture above is a reminder. This picture was taken at a school near Hudson Bay, in Canada. Most of the children's parents are fur-trappers or workers in the trading-post community where the school is located.

Of course, no one picture can suggest what all of this vast area is like. Many areas are treeless. Many are covered by dense forests. Thousands of square miles are almost entirely uninhabited. There are also a few cities with hundreds of thousands of people. The temperature maps (pp. 374-377) show that, in summer particularly, some areas are much warmer than others. The warmest area of all is along the northern shores of Lake Erie and Lake Ontario. This should be no surprise for this part of Canada actually reaches as far south as the northern boundary of California. This is shown by the map on pages 230-231.

In spite of these differences, the bitter cold of winter is a major concern for most of the people in Canada, Alaska, and Greenland.

Canada

Where the people came from. The French were the first to come to Canada, settling along the St. Lawrence River (pp. 230-231,

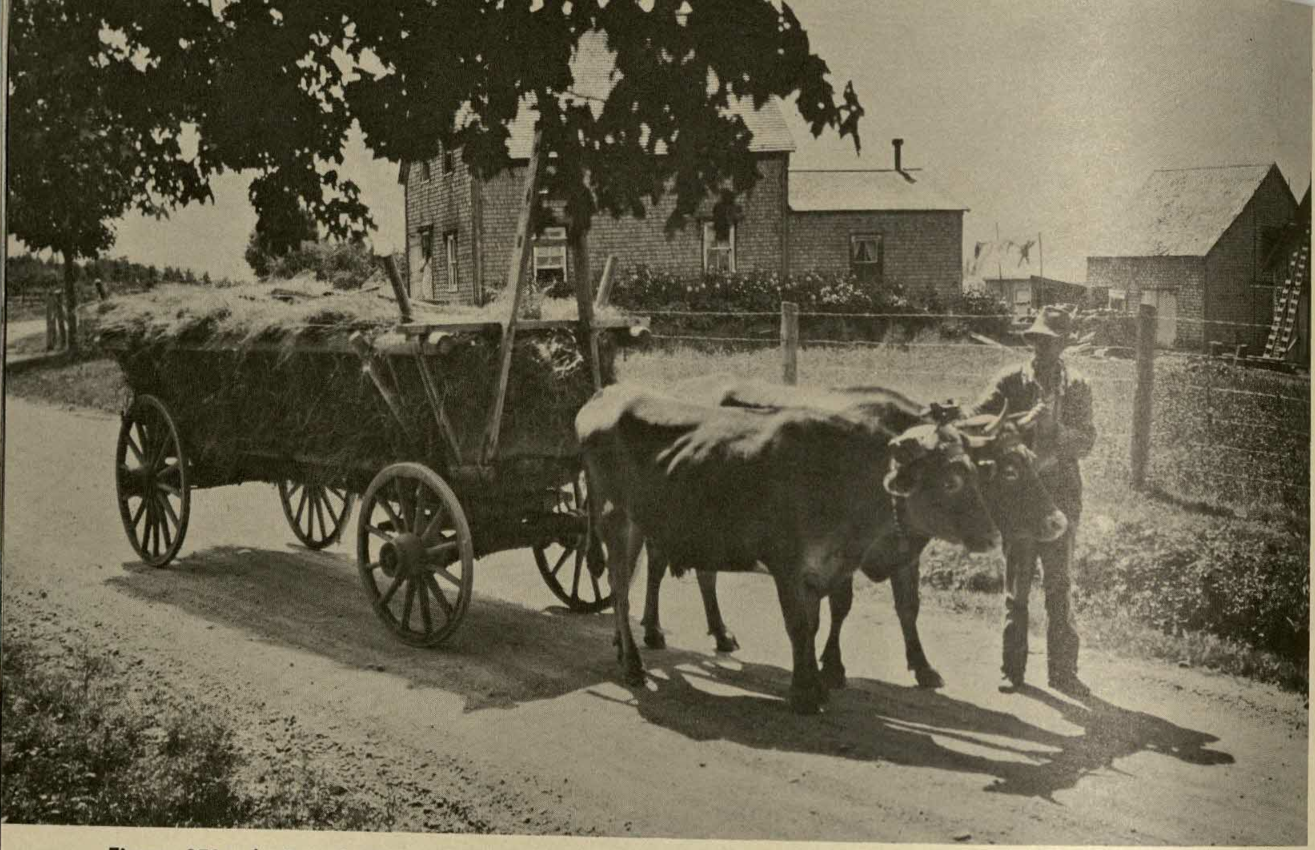


Figure 258. In French Canada

Courtesy Dept. of Mines and Resources of Canada

382). Then came English settlers, and for more than 150 years the British and the French struggled for control of the land. The British finally won, but the French people stayed on. Today about a third of the people in the nation are French-Canadians. Both English and French are official languages, used in the Parliament, in government publications, on stamps and money, and on the broadcasting network owned by the government.

Many of the French-Canadians are farm people who live along the St. Lawrence, particularly between Montreal and the sea (p. 382). The picture above shows one of these farmers. He has paused with his team of oxen and load of hay in front of his farmstead. It is not easy to make a living by farming in much of the rocky land of eastern Canada. Perhaps if anyone can do it, the French-Canadians can. They are known as a very thrifty and hard-working people.

About half of the people of Canada are of British ancestry, which leaves fewer than 20 people in a hundred, who are of neither French nor British stock. Most of these others are recent immigrants from other European countries, particularly Germany, Russia, Scandinavia, and the Netherlands. A few came from the Orient, and fewer still from Africa. In the great forests live a few thousand Indians, and along the Arctic coast the Eskimos continue their endless search for fish and wild game (p. 33). Canada, then, like the United States, is a nation of many different peoples.

Similarities. Canada is also much like the United States in the types of work the people do for a living. Most of the Canadian people live in towns and cities, earning their livelihood from manufacturing, trade, transportation, and special services. About one-fourth are farm people.

Many of the towns and cities greatly resemble those in the United States. On page 261, for example, you see the main business street of Toronto, second largest city in Canada. There is little in the picture to suggest that it was taken in Canada and not in the United States. Notice the clothing of the people, the drug stores offering sodas and lunches, the theater, the various shops, the street cars, and the familiar brands of automobiles. In fact the story of main street in the United States (pp. 236-237) might almost be changed to "Along main street—in the United States and Canada."

Freedom of travel and communication is in part responsible for these similarities. People travel freely back and forth across the border. In both countries people read many of the same books and magazines, see many of the same movies, listen to some of the same radio programs. They buy many of the same brands of merchandise, advertised alike in both nations. Every year thousands of Americans spend their vacations in Canada. Thousands of Canadians have moved to the United States, and thousands of Americans have gone to Canada to live. This is not to say that Canada and the United States are exactly alike. But an important fact is that they are strikingly similar.

Using the land. The Canadian people are somewhat like a family that owns a house of 100 rooms, but lives in only four or five rooms. This fact is shown clearly by the maps on pages 226 and 370-371. The Canadian people own a vast land, larger than the United States. But most of the people live close to the southern border. There they have built their farms and cities. As you have read, it is chiefly the long, bitterly cold winters and the very short summers that keep them from making much use of the rest of their land, the other 95 rooms of the house of their nation.

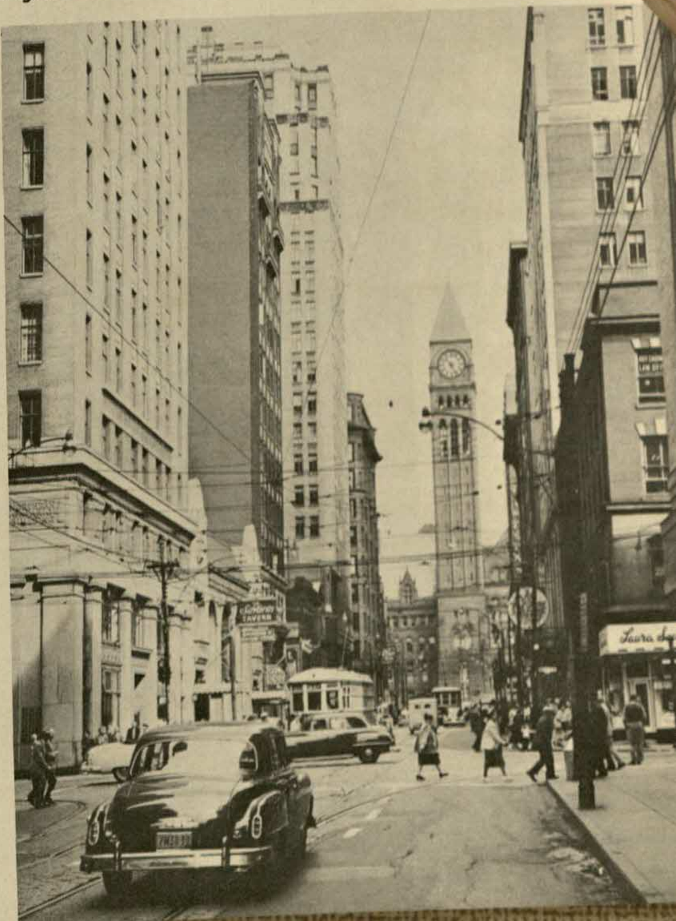
Fortunately for Canada, there may be large mineral resources in the coldest lands. Canada produces each year many millions of dollars' worth of gold, silver, copper, nickel, and other minerals. Many of the mines are in places much too cold for agriculture. Forests will grow also where it is too cold for crops. So the forest workers of Canada have pushed northward from the farm lands, as you can see by the map on page 226. In the years ahead there may well be greater development, especially of mineral resources, in spite of the cold climate.

Canada's main highways. The southern margin of Canada, like the United States, is well served by routes of transportation. Fine, paved highways reach out from the larger towns and the cities. On page 382 you can see the trunk railroads that extend from coast to coast. The map on page 379 shows the air routes which reach to isolated spots in the northlands and air routes which connect Canada with other nations. In addition, the St. Lawrence River and the Great Lakes make a single waterway more than 1500 miles long, which is Canada's main highway for carrying freight.

This water highway is as well located for use by Canada as by the United States (p. 244). The grain-producing prairies of middle western Canada lie at one end of it. The cities of eastern Canada lie near the other end. The

Figure 259. In Toronto

© *Black Star*



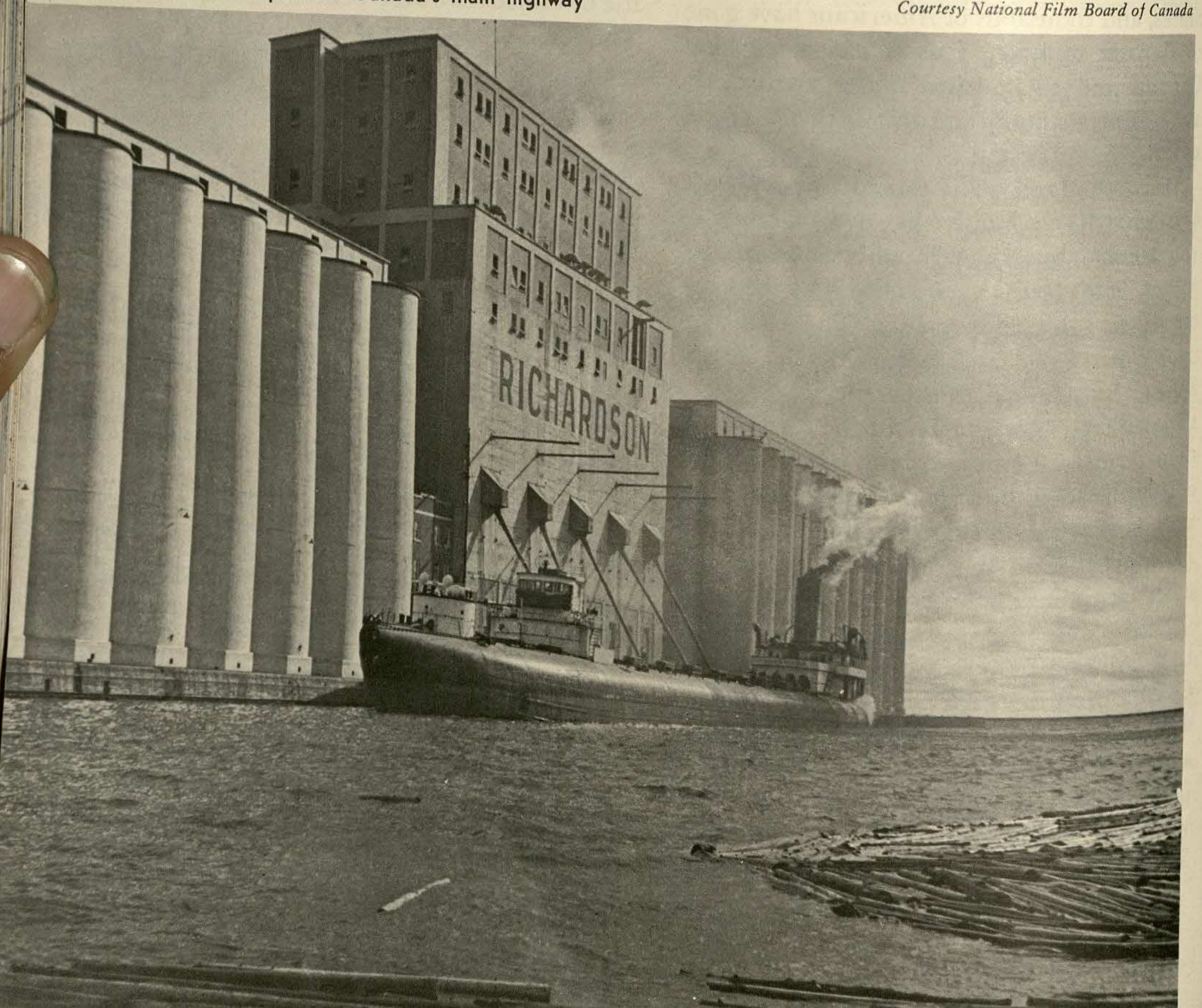
grain moves first by rail to ports on Lake Superior, where it is stored in enormous elevators such as are shown in the picture below. There the great freighters take on their cargoes, thousands of bushels of wheat, in a matter of minutes. In Lake Erie and Lake Ontario they may join other freighters, carrying coal from Ohio ports to eastern Canada, perhaps to Montreal. They may meet ships carrying wood pulp and paper from mills along the St. Lawrence to Chicago.

But the winter of the northlands affects the St. Lawrence, too. As much as five months a year the stream is blocked with ice. Then cargoes bound for Europe must be hauled by rail, at considerable extra expense, to open ports on the Atlantic, either in New England or on the Canadian coast northeast of Maine. During the summer the great cities of Quebec and Montreal are port cities. During the winter they are inland cities, hundreds of miles from usable water highways.

Ten cities. In Canada there are ten cities which have a population of 100,000 or more. These are, in order of size, Montreal, Toronto, Vancouver, Winnipeg, Hamilton, Ottawa, Quebec, Edmonton, Calgary, and Windsor. On the map on pages 230-231, you will find that most of these cities lie close to the southern boundary of Canada. With the exception of Winnipeg, the center of trade in the prairies, and Edmonton, north of Calgary, the large cities are all located on important waterways.

Figure 260. A port on Canada's main highway

Courtesy National Film Board of Canada



Using a check list for the study of these cities would reveal the same variety in shapes, sizes, and specialties that you found in the urban areas of the United States (pp. 162-163). In the towns and cities of Canada as a whole, one outstanding type of manufacturing is the making of metal products of many different kinds. Other important types are the manufacture of food, paper and other wood products, cloth and clothing.

Canada's relations with the rest of the world. The official name for Canada is the Dominion of Canada. This at once calls attention to Canada's world ties within the Commonwealth of Nations. As you know, this includes Britain and self-governing Australia, Union of South Africa, India, Pakistan, Ceylon, and Canada, and various other lands. As Canadians look at the world, therefore, they see people related to them politically in every inhabited continent. These political ties have made a great difference to Canada—in trade, in war, and in the way in which Canadians look at the world.

Trade within the Commonwealth has certain advantages, but this trade has not been great enough to take first place away from the United States. Putting it another way, the advantages that go with political ties have not offset the advantages of the nearness of the United States, and the mutual needs of the United States and Canada. Britain ranks next to the United States in Canada's foreign trade.

Canada's major exports include newsprint paper, wheat, lumber, wood pulp, fish, aluminum, and nickel. Imports are machinery, petroleum, coal, automobile parts, iron and steel products, fruits, cotton, and sugar. These facts suggest great natural resources in forests and in some minerals. They also point to the lack of the mineral fuels, coal and petroleum, as well as certain types of factories. But most of what Canada needs, the United States can supply. And much of what Canada exports, the United States needs.

Alaska

Great resources. Alaska, like Canada, has certain great natural resources—particularly minerals, forests, and fish. But only two of these are suggested by the symbols on the map on page 226. So far the forest resources have been little used, chiefly because of the distance from markets. Both the Canadian forests and the forests of the United States proper are much nearer the great urban centers of northeastern United States than are the forests of Alaska.

The symbols for ranching and herding in Alaska (p. 226), stand for places where Eskimos herd reindeer on cold, wind-swept plains. As you would expect, there are no symbols for farming in Alaska. In the entire territory, there are only a few hundred farms.

Greenland

Large island, small resources. Greenland is the largest island in the world, nearly one-half as large as the United States (p. 382). This island is always cold (pp. 374-377). Except for a narrow strip along the coast, the island is covered with a huge mass of ice. Here and there the ice cap reaches to the sea, and huge chunks of ice break off, forming icebergs.

All together, about 21,000 people live in Greenland. All are Eskimos, except for a few hundred Danes engaged chiefly in trade and government work. And, of course, all the people of Greenland live along the coast.

Fishing is the one outstanding occupation carried on by the Eskimos (p. 226). Recently many of them have learned to use motor-driven boats, which has made fishing much more profitable. There is grass enough in sheltered valleys to pasture a few goats, sheep, and cattle. In similar places people grow some hardy vegetables such as turnips, cabbages, and potatoes. But little agriculture can be carried on in this cold northland.

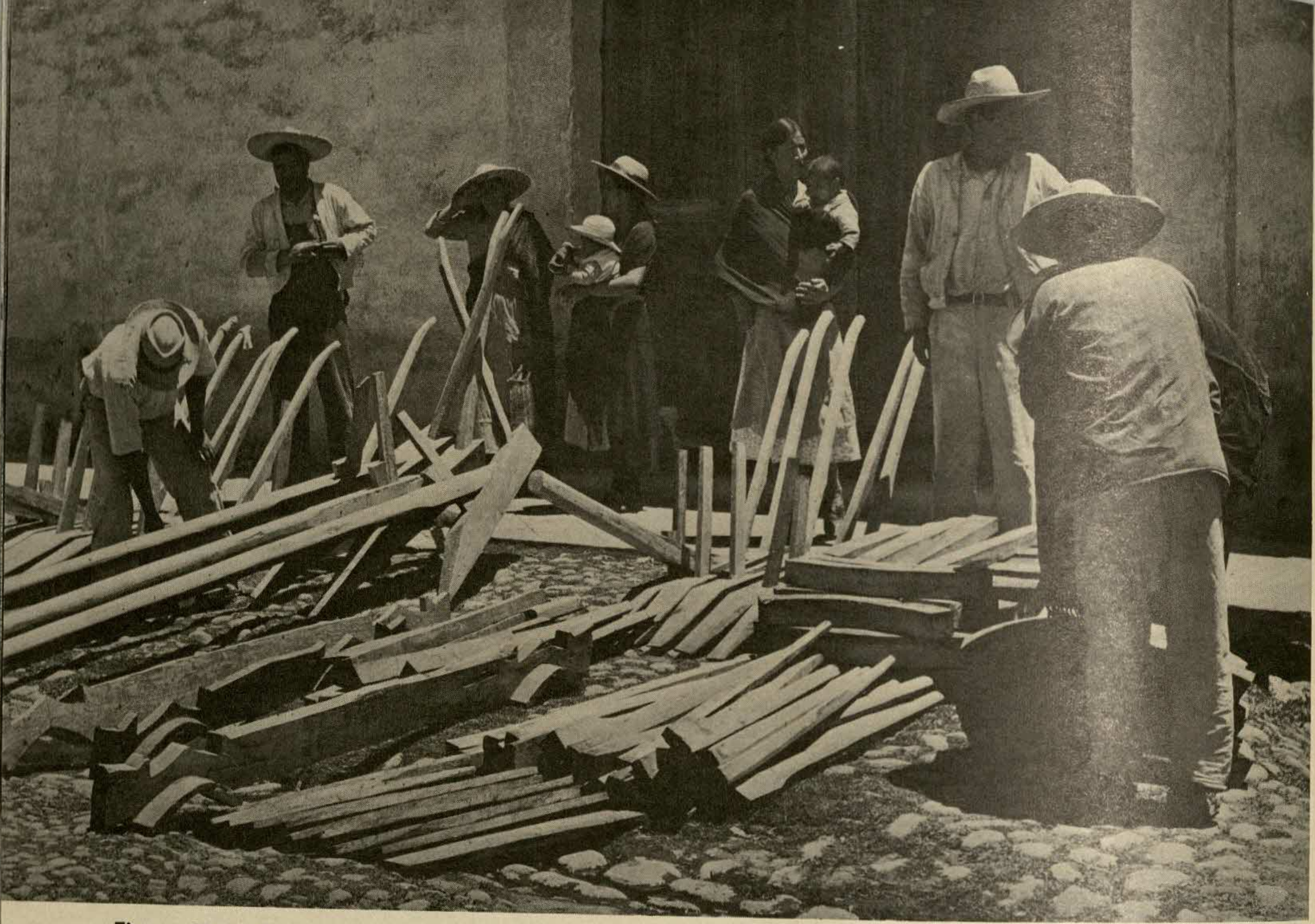


Figure 261. A mountain town

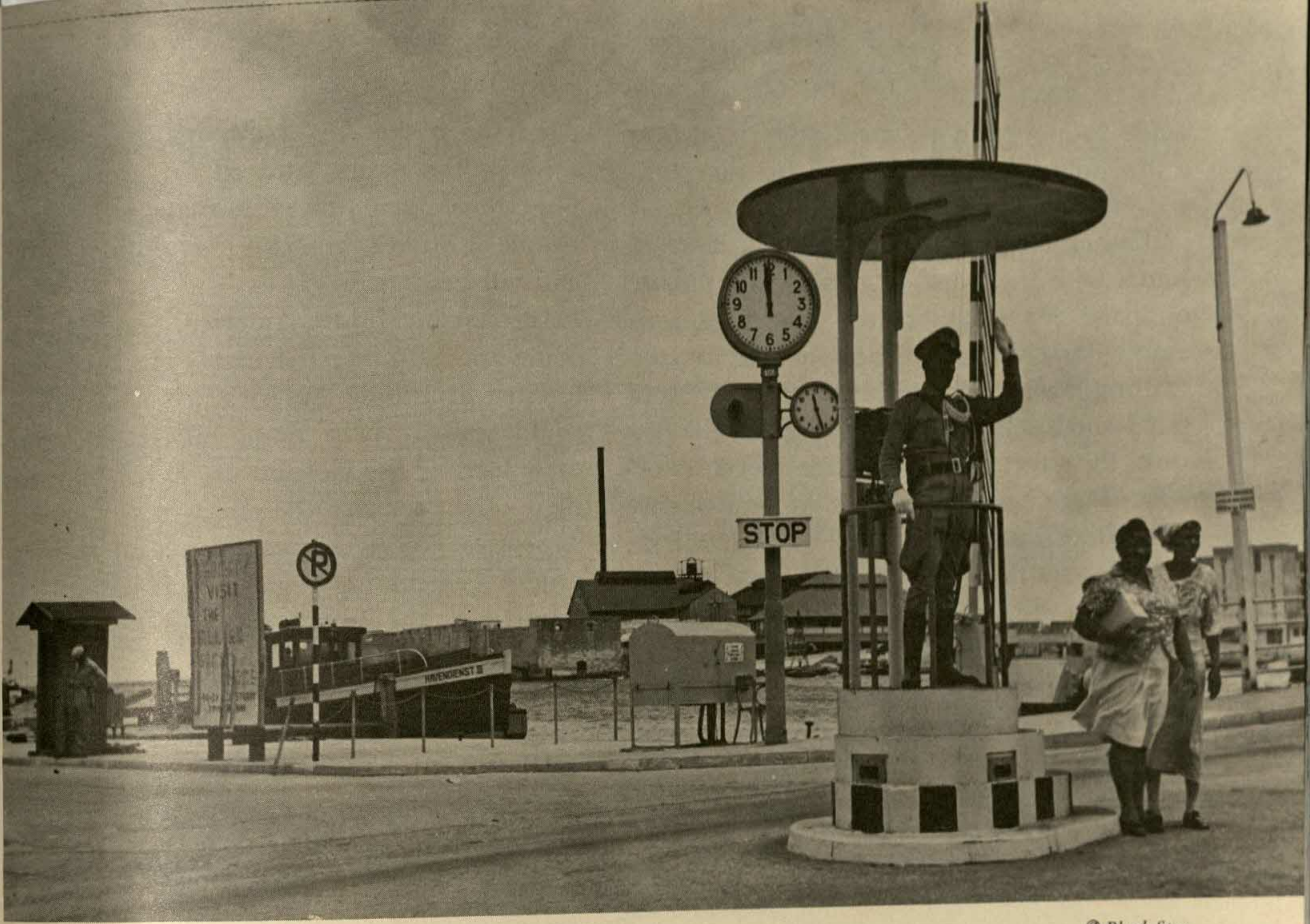
Photo by Dorothy Hosmer

Middle America

Land, weather, and resources. The map of North America, page 382, tells much about the differences within Middle America. Part of Middle America is mainland; part of it is composed of islands. In both islands and mainland, we find lowlands and highlands. The land forms map, pages 380-381, adds further facts about plains, plateaus, hills, and mountains. You can tell by the location of Middle America that there the noon sun is always high in the sky. Partly because of the mountains, there may be differences in temperature (pp. 374-377) and in rainfall (pp. 372-373).

The map on page 226 shows variety in the use of natural resources. There are resources in animal life, in grasslands, in soil, in forests, and in minerals. So far, however, the soil resources have been most important, to the larger part of the population.

You will remember the pictures and stories of the plantation farmers in Middle America, pages 90-91, and the subsistence farmers, pages 91-92. These are representative not only of most farm workers but of most of the total population. The general pattern of work, therefore, in Middle America is unlike the pattern of work in the continent as a whole, as shown by the graph on page 226. As you move south from the United States, you move from a country which is largely industrial to countries which are chiefly agricultural.



© *Black Star*

Figure 262. An island city

Who are the people? Three great peoples make up the bulk of the population of Middle America. These are Indians, Negroes, and Europeans, particularly the Spanish. The Indians were the first inhabitants. They had achieved a rather advanced civilization, especially in Mexico, before they ever heard of Europe. Then came the Spanish, after Columbus' voyages. Later, Negroes were brought from Africa to work on the plantations.

Today there is a sizable group of Indian people, living chiefly in the mountains on the mainland. The picture on page 264 shows some of these Indians in a Mexican town. There also are many Negro people, such as those shown in the picture above. This photograph was taken in the West Indies. Nearly all the people in Jamaica and Haiti are Negroes. In every country in Middle America there are some people of unmixed Spanish blood. And in each country, in varying numbers, there are people of mixed race.

In some ways the people of Middle America, as a group, have not made as much progress as some of the other peoples of North America. Costa Rica, as a nation, has made much progress in education but, in most countries, the level of literacy is low. Health standards, too, are low in many of the countries. But advances are being made. The boys of the agricultural school shown in the picture on page 208 live in Honduras. This is an example of progress in a very important kind of education.

In town and city. The two pictures on these facing pages suggest some general differences between towns and cities in Middle America. For example, the towns have been modernized less than the cities. Also the workers in the towns depend more on local resources. In the picture on page 264, two or three farmers and their families are inspecting wooden plows offered for sale in the town square, on market day. These plows were made in a workshop which is perhaps only a few doors away. The wood for the plows was cut in a forest near-by.

The cities are more commercial, more in touch with the world at large. The picture on page 265 suggests this. Notice, for example, the clocks and the equipment for controlling traffic. These almost certainly were not made locally. Just to the right of the picture, the street crosses a bridge over a waterway. The smaller clock tells the time of day. The larger clock tells when the bridge will be raised to let ships pass by. If people wish to get across when the bridge is raised, they can use the small ferry boat you see at the left.

Great cities like Mexico, and Habana, Cuba (p. 382), have tall buildings like those in many large cities in the United States. Each has many factories and many different kinds of workers in special services. Each depends on a flow of trade that reaches out through the nation and to the world. We must remember, however, that most of the people of Middle America live in small towns and villages, not in cities.

Interest in Middle America. The United States and Europe particularly are keenly interested in Middle America. As a nation we could scarcely help being interested, since these lands are so close to us. What happens there might concern the safety of our nation. This area, too, is a great source of tropical products, including sugar and bananas. No country in the world supplies us with as much sugar as Cuba.

Europe has somewhat similar interests in Middle America. Britain, France, and the Netherlands have colonies in that area. Europe also is a great market for crops grown in tropical lands.

North America's Place in the World

A great story. The settlement and development of a new continent, North America, by the sons and daughters of the Old World, was one of the great events of history. Nothing like it had ever happened before. Nothing like it has happened since.

How did this come about? There are many reasons, and we can mention only a few. After America was discovered in 1492, the countries of western Europe which bordered on the Atlantic took the lead in exploring and settling this new land. The most important of these countries were Britain, France, Spain, the Netherlands, and Portugal.

These countries were farther advanced in many ways than the other peoples of Europe or of Asia. They had developed better tools and had made better use of certain resources, especially iron. They had stronger and better organized governments. They benefited more quickly from the important invention of the printing press, which came about the middle of the fifteenth century. The spread of knowledge which the printing press made possible helped the people of these countries learn about the New World. It also helped them learn about the progress which had been made in navigation and in other fields of science.

Later, one of these countries, Britain, took the lead in the Industrial Revolution. One of the most important developments of the Industrial Revolution was the use of new kinds of power in the factories, in transportation, and on the farms. At the same time, then, that a vast continent, rich in natural resources, was being opened up, new kinds of power were available. These new types of power made possible the swift development of the untapped resources of the new land.

Furthermore, the people who left their homelands to settle in America were sturdy and vigorous people. They threw the energy of their minds and muscles into the building of homes and cities, factories and railroads.

Today, North America occupies a key position among the major regions of the world. As you can see by the globe map on this page, this continent lies by itself, between the Atlantic and Pacific oceans. Yet in countless ways it is linked with other lands and other peoples. Millions of people abroad depend upon the leadership, the products, and the trade of the United States. Truly the continent and the nation have come of age.

Helps in Learning

1. Find the area and the population of Canada and of Alaska in the statistics on page 396. Copy these figures on a sheet of paper or on the blackboard. Under them, write the area and the population of your state and of New York State (p. 400).

How does your state compare with Canada and with Alaska in area and in population?

How does New York State compare with Canada and with Alaska in area and in population?

Find the population of New York City on page 399. How does it compare with the population of Canada? Of Alaska? Of your state?

2. On the map of the United States (pp. 230-231), put a finger of your right hand on the southernmost tip of Canada and a finger of your left hand on the northern boundary of California. At first glance, which appears to be farther north?

You can use the numbered east-west lines on this map to find out whether you are right. Find the east-west line which is 40° north of the equator.

On a sheet of paper, mark off the distance between this east-west line and the southernmost tip of Canada. Then mark off the distance between this east-west line and the northern boundary of California.

What do you find to be true?

3. What things in the picture on page 259 suggest cold winter weather?

Notice the treetops in the distance and also the trees to the right of the school building. Are such trees common, or uncommon, in your community?

Do you think these trees are "conifers," or "broad leaves"? Read again the description of conifers and broad leaves on pages 125-126 to make sure you are right.

4. Name all the things in the picture of Toronto's main business street (p. 261) which remind you of the main business street where you do your shopping.

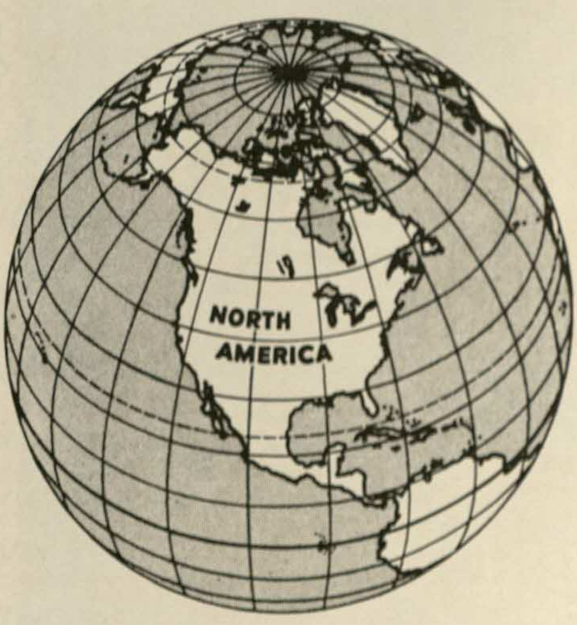
5. The pictures on pages 88 and 89 were taken in Canada. What things in these pictures suggest commercial farming, rather than subsistence farming?

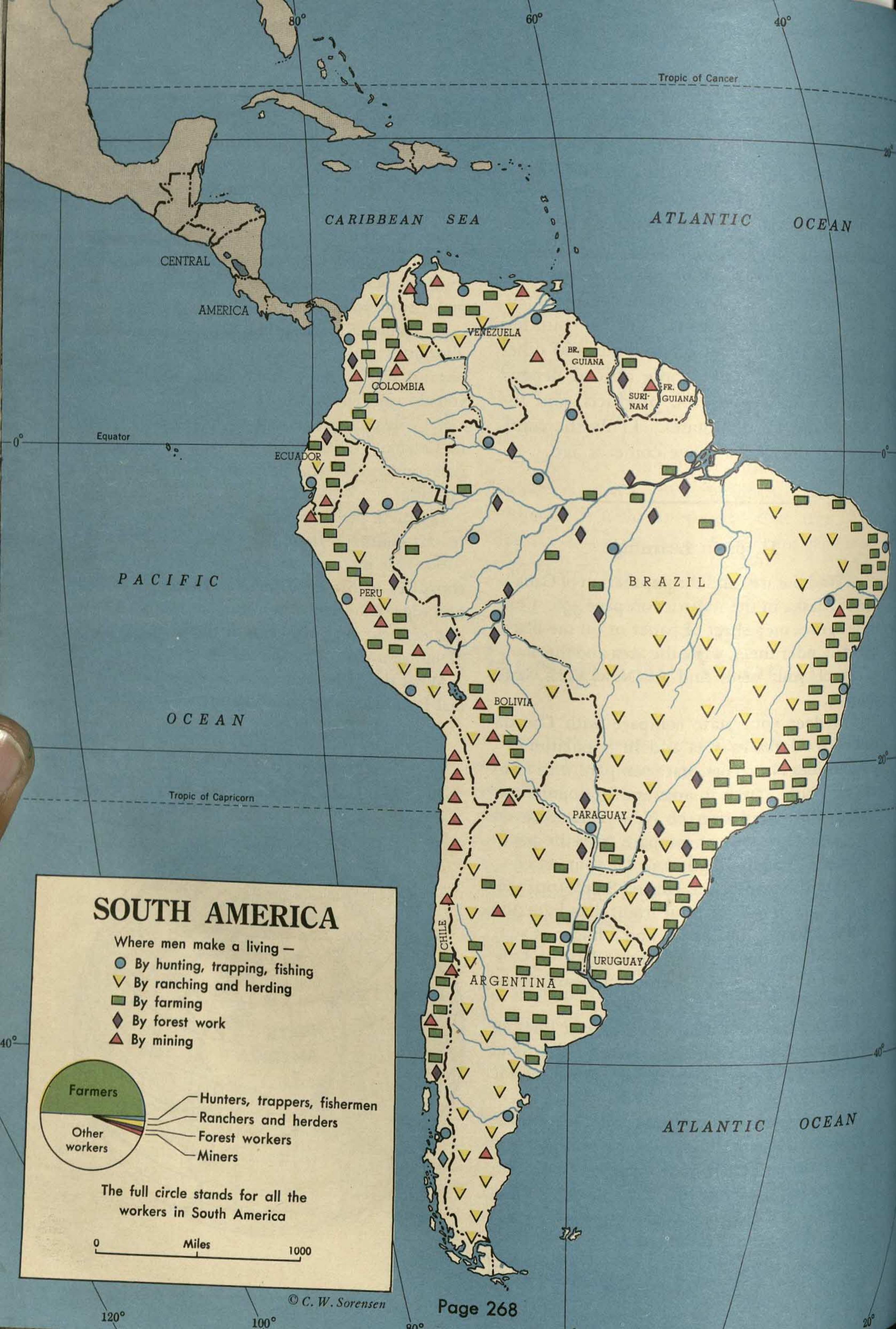
Do these pictures remind you of farm scenes in our country? If so, how?

6. The pictures on page 90 were taken in countries in Middle America. Coffee, bananas, and sugar cane are "warm weather crops." Only one of them is grown even in the southern part of our country. Which one?

What things in these pictures suggest commercial farming, rather than subsistence farming?

Figure 263. North America on the globe





SOUTH AMERICA

© C. W. Sorensen

LIVING IN SOUTH AMERICA

Looking at the continent. South America is a continent of mountains and lowland, equatorial heat and extreme cold, tropical forest and wind-swept plain.

Along the Pacific coast the Andes reach more than 20,000 feet above the sea (p. 383). On the higher ranges the snow never melts, and the ice may be hundreds of years old. Not far north of the equator, inland from the northern coast, are the Guiana Highlands (p. 383). Their steep, rocky slopes are covered with a tangled mass of trees, bushes, and vines. In eastern Brazil, near the Atlantic coast, are the Brazilian Highlands, an area of low, rolling mountains.

Filling most of the northern half of the continent, east of the Andes, is the huge Amazon lowland, always hot, drenched in rain, and covered with dense tropical forests. The picture on this page shows men building a road in this kind of land. They have fought the dense forest and soft, soggy ground and are now digging through a hill that is covered with a tangled growth of vines and trees.

South of the Amazon lowland, also to the east of the Andes, a wide-spreading plain extends southward toward the tip of the continent. In many places this plain is dry, dusty, and windswept, but in others it is green with pastures and growing crops.

To understand fully how people live in the various parts of South America, the picture of the continent must be kept in mind.

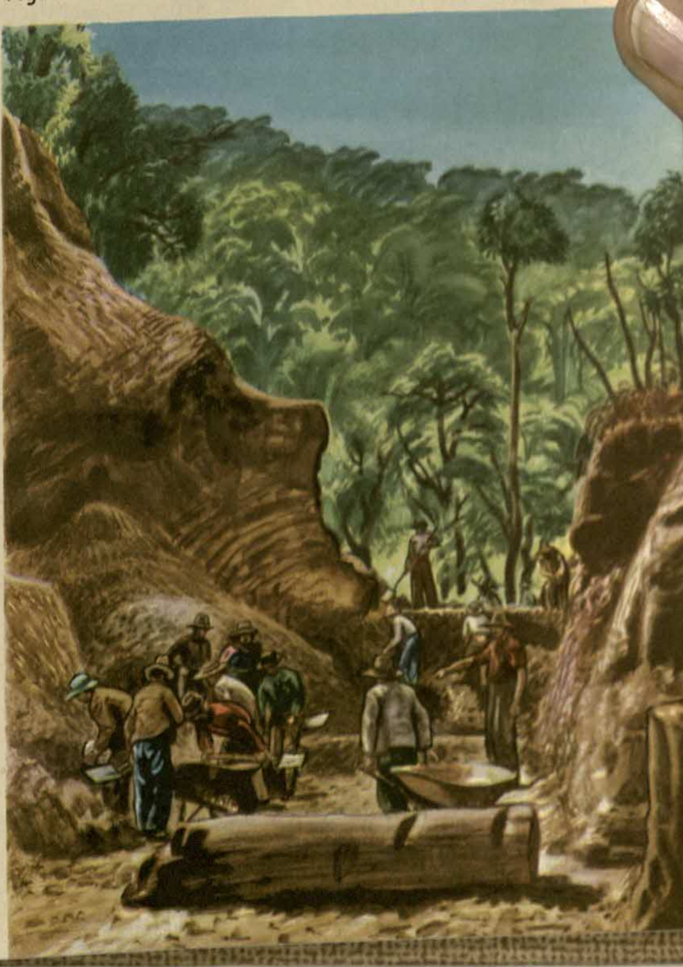
At work in South America. The map on the opposite page shows how men work with the natural resources in this great continent. As you would expect, the pattern of work follows somewhat the pattern of the land.

Along the western coast of the continent, five different symbols combine to form a narrow and almost continuous belt (p. 383). In the Amazon lowland the few symbols show that there is some farming, forest work, and hunting, trapping, and fishing. A wide "farm belt" stretches along the southeastern coast from about the middle of Argentina to the "corner" of Brazil. Next to these farm lands there is an irregular strip of grazing land, reaching from the southern tip of the continent almost to the northeastern coast of Brazil.

The graph on the map opposite tells you that more than half of the South American workers make a living directly from the natural resources. This is strikingly different from what you found in North America.

A hollow continent. Most of the symbols showing different kinds of work are found near the edges of the continent. The maps on pages 160-161 and 383 show that most of the

Figure 265. Difficult work *From photo by C.I.A.A.*



← Figure 264

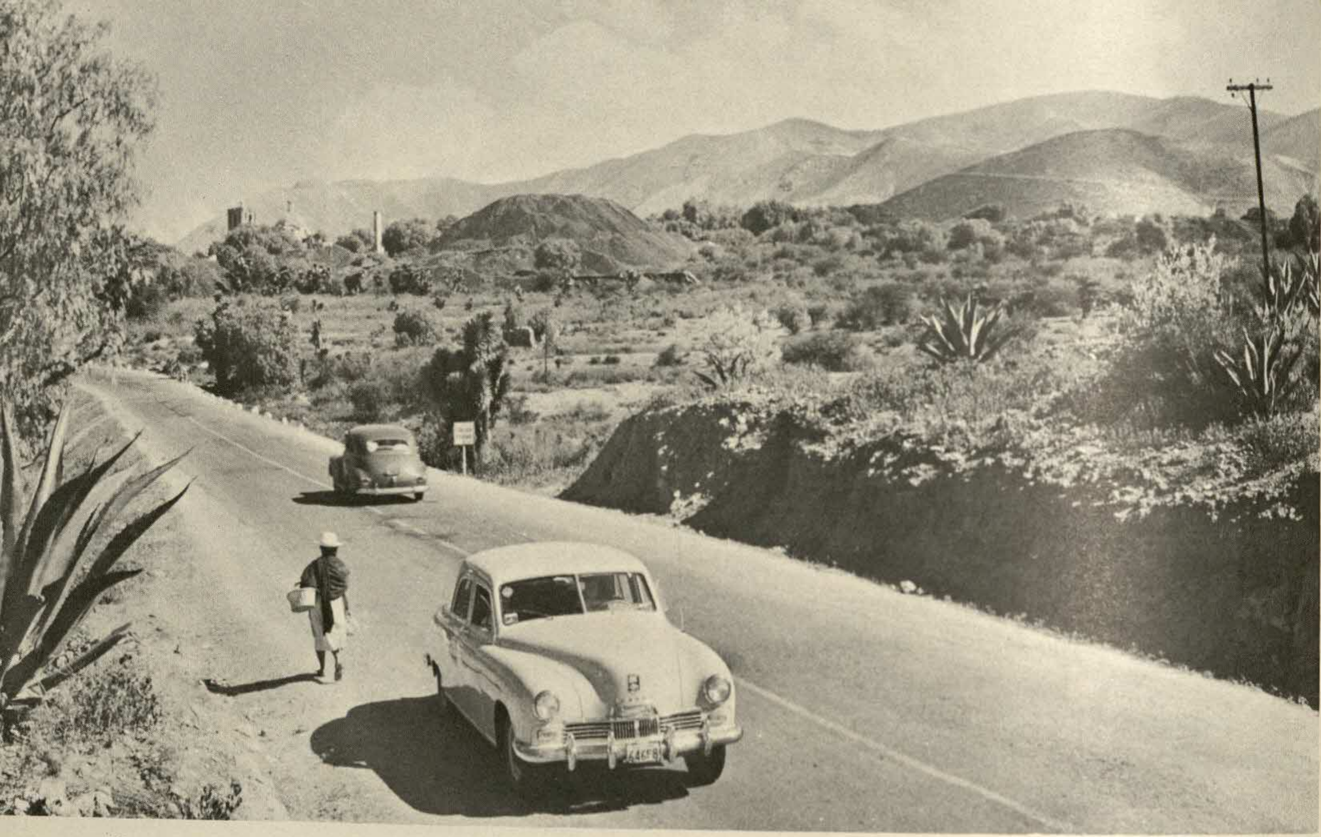


Figure 266. Along the Pan American Highway

© *Herbert Lanks, from Black Star*

cities are in the same area. The population map on pages 370-371 tells a similar story about the population as a whole. You can easily see, then, why South America is called a hollow continent. Comparatively few people live in the interior.

The pattern of transportation. In transportation, too, South America is a hollow continent. This is shown by the map on pages 388-389. Most of the vast interior is not served by any modern means of travel.

In some parts of the plains of southern South America, of course, roads and railroads may be laid with ease in almost any direction. But in the rainy, tropical lowlands, this is not the case. The picture on page 269 shows that these lowlands are a barrier to transportation. Soft ground, heavy rains, and dense forests make road-building difficult in such areas.

The Andes, too, are a barrier to transportation, difficult to overcome. There are few transcontinental land routes in South America.

In spite of these barriers, there are modern highways and railroads in parts of South America. The picture above shows part of one very famous road, the Pan American Highway. Except for a few gaps, including one between Panama and Colombia, this highway extends from Texas to Argentina.

Good highways, like the Pan American Highway, however, scarcely touch the great interior. As you can tell by looking at the map on page 383, railroads, too, scarcely touch the interior. Most South American railroads are comparatively short, and are grouped in separate clusters. They were planned, in general, to connect the chief ports with near-by inland areas.

One can readily see the advantages of air transportation in this land of rugged mountains and dense forests. Communities which have never been connected by highway or railroad because of barriers to land transportation may be only minutes or hours apart by air. Airlines connect the leading cities (p. 379), and planes may be able to go quickly even to remote villages in emergencies or on special errands.

Although in many places land and air transportation are important, the sea is the great highway for travel between the various countries. Nearly all freight moving from country to country in South America goes by ship.

In terms of transportation, then, the countries of South America seem to turn their backs to each other. They face outward toward the ocean, which is a kind of international main street that connects nearly all of them.

Countries of South America. Following the voyages of Columbus, Portuguese and Spanish explorers pushed into South America. Eventually, Brazil became a huge Portuguese colony, and most of the remainder of South America became part of the Spanish Empire. Small Dutch, French, and British settlements along the coast, north of the mouth of the Amazon River, developed into colonies—Dutch Guiana (now called Surinam), French Guiana, and British Guiana.

Spain and Portugal have long since lost all their colonies in South America. Only the little Guianas remain as colonial possessions. The rest of the continent is divided among ten independent countries (p. 383). Several racial groups make up the population of these countries—whites, Indians, Negroes, and mestizos, who are of mixed race, descended from both whites and Indians. But, as you should expect, the Brazilians continue to speak Portuguese, while the people of the other independent countries speak Spanish.

In form, the governments of most South American nations somewhat resemble ours, partly because their wars of independence followed ours. Several nations have a constitution, a president, a congress, and a system of courts, somewhat like our own. In actual practice, however, their governments are less like ours, for several reasons. As you have seen, the people who first settled in North America followed in the main the English tradition of government, which was different from that in Portugal and Spain. Furthermore, most South American countries have large groups of people who have not had the benefits of education, and who accordingly take little part in government.

Helps in Learning

1. Suppose you flew over South America, from west to east, along the Tropic of Capricorn, what would you expect to see, according to the maps on pages 268 and 383? Over what countries would you fly? Choose some other route crossing South America, and write briefly what you would expect to see along the way.

2. It has been said that nearly all the larger cities of South America are within 100 miles of salt water, that is, the ocean. Does this seem to be true, judging from the map on page 383? Would the same be true of the United States (pp. 230-231)?

3. Find three illustrations of the fact that railroads were planned, in general, to connect ports with near-by inland areas (p. 383).

4. Which countries in South America might well be called "Countries of the Andes" (p. 383)? Make a list of them.

5. Use the graphs and statistics on pages 396-400 to find the information you need for the following questions and exercises.

Make a list, in order, of the largest five countries in South America, in terms of area. Make another list showing, in order, the five countries with the largest populations. What differences, if any, do you notice in these lists?

Find a state in the United States that is about the size of Uruguay.

Is it true that the entire population of Ecuador is less than that of Chicago?

How does the size of Brazil compare with that of the United States? What difference is there in the number of people in the two countries?

6. Brazil is so large that the extreme northern part of Brazil is said to be closer to Florida than to Rio de Janeiro. Use a string on a globe to discover whether or not this is true.

7. The natural resources of South America are unevenly divided among the countries. Name four countries that appear to be particularly rich in minerals (p. 268). What two countries have most of the cultivated land (pp. 384-385)?

At Work in Brazil

The story of a giant. Brazil is big. In area and population it accounts for almost half of the continent. As you have discovered, it is larger than the United States. If the southern tip of Brazil were placed at New Orleans, the northern edge would reach beyond the Arctic Circle in Canada. You can prove this by using a string on a globe.

The story of Brazil is therefore a big and important story. It concerns half a continent, and more than 50 million people who live in it. Much of this story also applies to Paraguay, a small southern neighbor of Brazil.

A small community in the Amazon lowland. Most Brazilians live in small communities. There are, for example, many trading posts scattered along the banks of the Amazon River. Many of the forest farmers, hunters, trappers, fishermen, and collectors of forest products buy and sell at these trading posts, which are their only means of contact with the outside world.

One such trading post is located on the banks of the Amazon, 2000 miles from its mouth, near the boundary between Brazil and Peru. About a dozen families, besides the trader, live in this little community. In small forest clearings they grow some of their own food, particularly corn, bananas, manioc, and sugar cane. Some of the men cut trees in the forest, and sell fuel to the river steamer which stops there once a month. Others gather rubber in the forest, catch fish in the streams, or hunt the peccary, a wild animal whose skin is valuable. Some of the women use the fiber of palm trees in making hammocks for sale.

From the outside world, perhaps the city of Manaos, the trader buys such goods as knives, cloth, and salt, which are shipped to him by steamer. These manufactured goods are bought by the families who live in the trading post and those who come to trade from the surrounding area. The trader also buys the products of the surrounding area and ships them to the outside world by steamer. To increase his business, the trader sends men in launches on trips of several hundred miles to buy rubber and skins from those who live deep in the forests. Apparently few people in the area are engaged in such special services as government, health, and education.

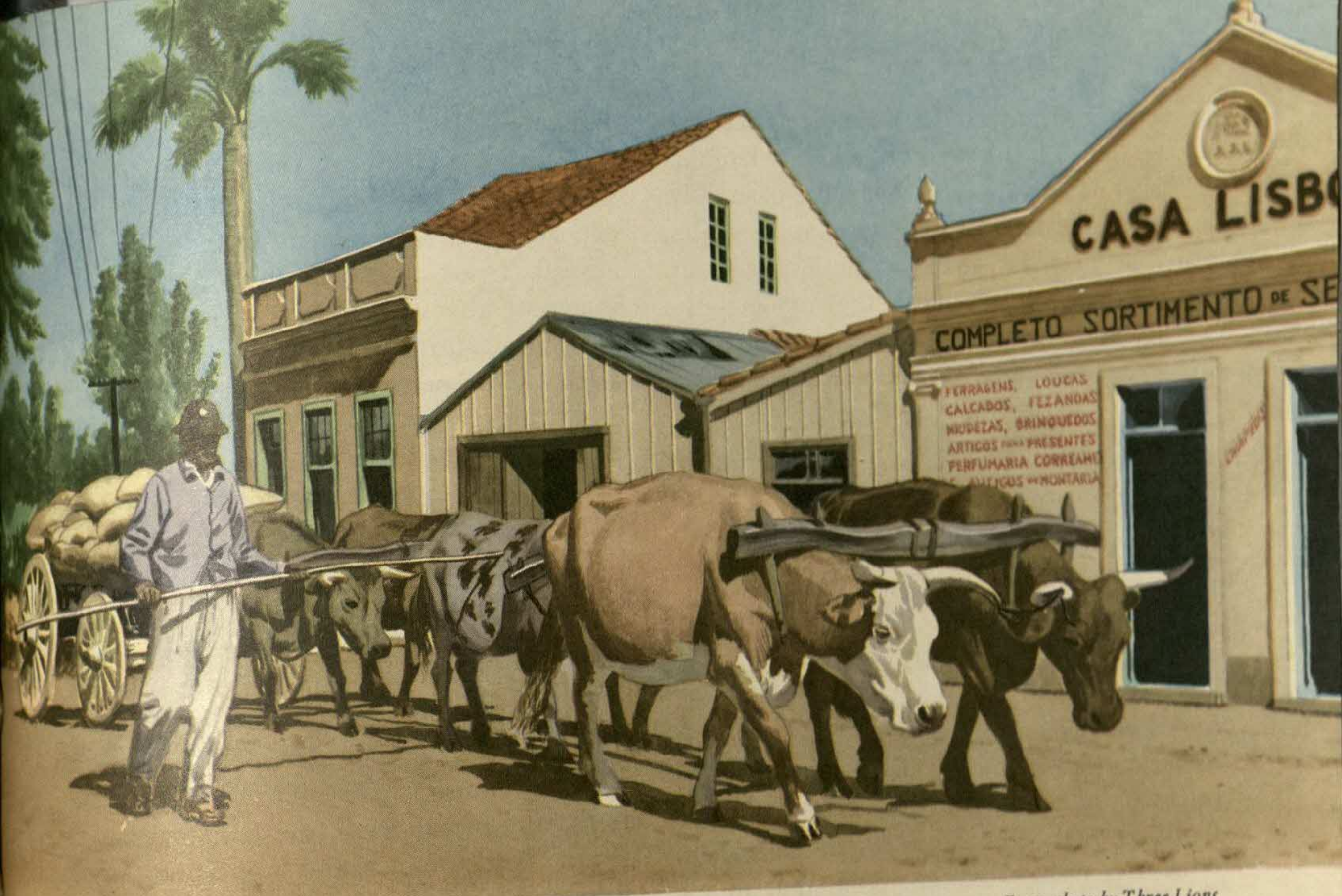
Brazilian "farm towns." As you read earlier (pp. 93-94), many Brazilian farmers live and work on plantations, each of which is almost a community by itself. However, most of the small communities, in both the ranch lands and the farm lands, are somewhat like the familiar farm towns of the United States. They are trading centers and service centers for the people who live in the countryside.

The picture at the top of page 273 shows a street in a farm town in middle eastern Brazil. A farmer is bringing a small load of grain to market. Trade is the chief business of this town. There are stores, and there is also a regular weekly market, or fair. People come from all sides to buy and sell at this fair.

The special services are not highly developed, although most of the larger towns are centers of local government, and have schools, churches, and some business of the special service type. But in the smaller towns, doctors and dentists are scarce. Telephones are generally lacking. There may or may not be a school, for more than half of the children in Brazil do not go to school. Nearly every town has a church. In the old days a community was supposed to include all who lived within hearing distance of the church bell.

The farm people do many things for themselves. Most of the grain which is used for food is ground in little water-driven grist mills, here and there along the streams in the open country. Beef is cut up, dipped in salt water, and dried in the sun to make charque, a favorite food. There are few laundries, for someone in each family does the washing by hand, at a spring or stream, and spreads the clothes on the grass to dry.

Each town, small or large, is a center of

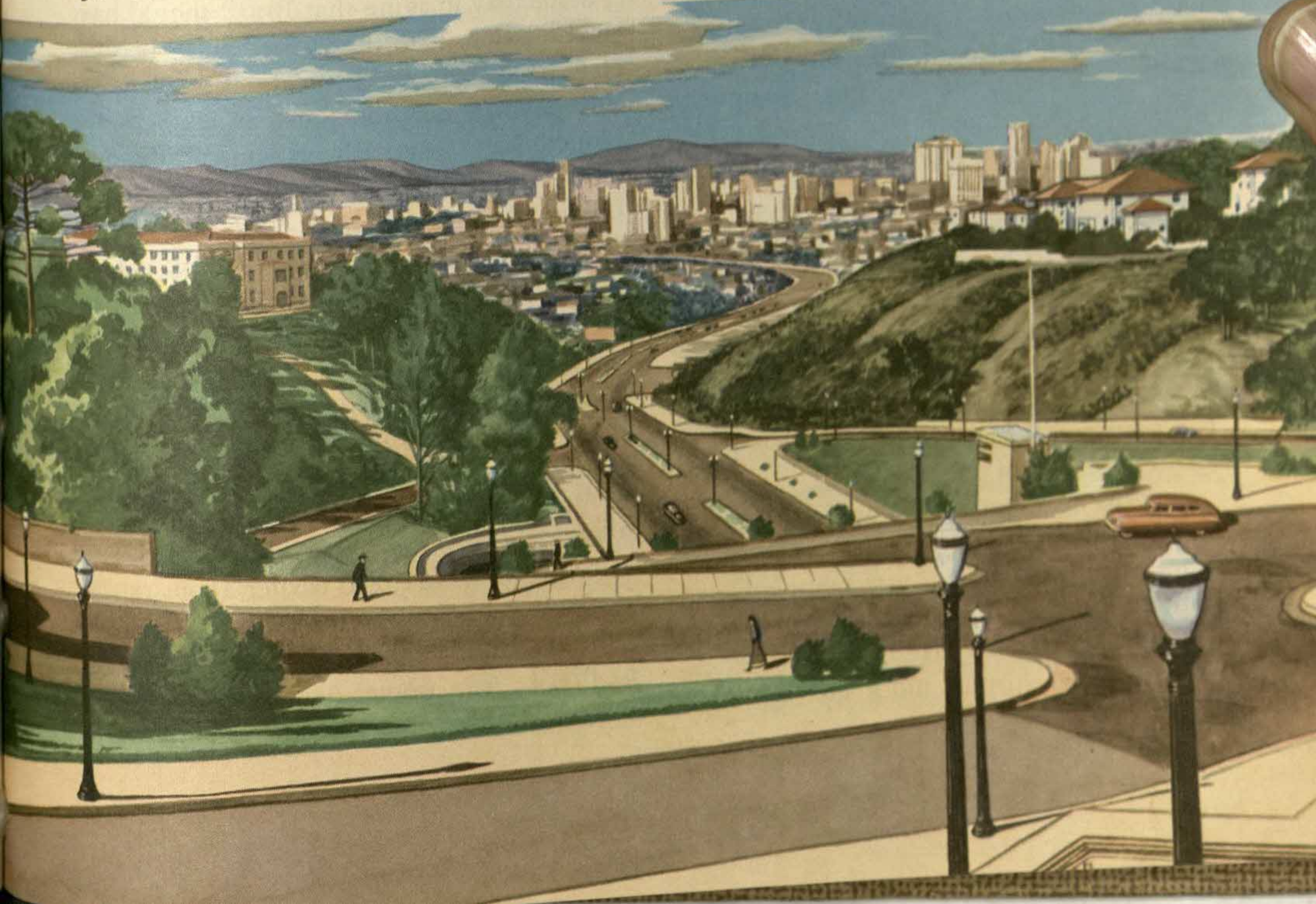


From photo by Three Lions

Figure 267. A small town in Brazil

From photo by C.I.A.A.

Figure 268. São Paulo, one of South America's largest cities



local transportation. In most instances, this means that it is the center of a network of dirt trails which are always either dusty or muddy. Some plantation owners have automobiles, and one may find taxis in the larger towns. Railroads reach nearly all the smaller cities and many towns. In most of rural Brazil, however, transportation remains at the stage of the oxcart and the pack animal.

From rural centers to urban centers. In thousands of small communities, then, the work with natural resources goes on, side by side with some manufacturing, trade, transportation, and special services. Many of the products are used in the same communities where they are produced. Of other products there is a surplus which goes to the larger towns and cities. In general, the various raw materials move toward the industrial heart of Brazil, in and near Rio de Janeiro and São Paulo (p. 383). The way of life in these urban centers is rather different from that in the smaller communities, a contrast which is suggested by the two pictures on page 273.

São Paulo, second largest city in Brazil, illustrates the pattern of life in the large cities of South America generally. In this city there are hundreds of big, busy factories, turning out cloth, clothing, food, machinery, and many other products that Brazilians need. Most of the automobiles used in Brazil are assembled in or near this city.

São Paulo, of course, is more than a group of factories. Its homes and shops are famous throughout southern Brazil. There are hospitals, schools, theaters, and other institutions that go with a truly modern city anywhere in the world. The municipal stadium in São Paulo can seat 80,000 people, and it has lights for night games of soccer football.

Surplus and shortage. Not all of the raw materials produced in Brazil go to Brazilian factories, nor do all the raw materials used in these factories come from the rural lands of Brazil. For Brazil, like every other country, has both a surplus and a shortage.

There is a surplus, especially of coffee, cotton, cacao, some meat products, hides and skins, and various forest products. These are exported in large quantities to markets abroad. In return Brazil imports machinery, including almost everything from trucks and automobiles to typewriters and sewing machines. Coal, petroleum, chemicals, and some grains are also on the long list of imports. Of these things there is a shortage in Brazil.

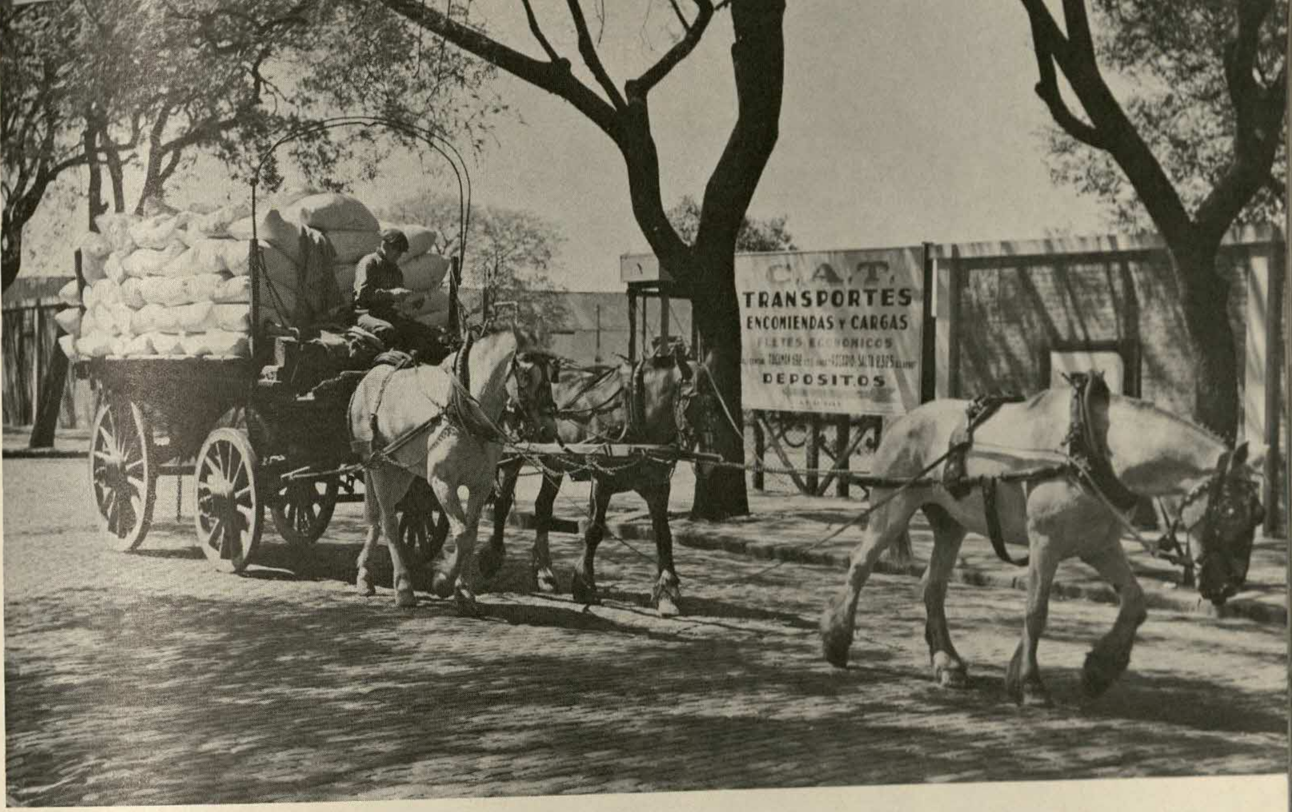
How Brazil looks at the world. It is to be expected that Brazilians should have close ties with Europe. Their language, literature, traditions, and customs originated there, for the most part. Probably in these things Brazil has much more in common with Europe than with the United States.

However, Brazil also has close relations with our country, particularly business relations. In normal times, the United States is Brazil's best customer, and supplies the larger part of Brazil's imports. It is no surprise, then, to learn that Brazilian businessmen read eagerly about politics, factory production, and prices in our country.

Some may imagine that Brazil should have close relations with the United States because of nearness. On the contrary, Brazilians see Europe as a neighbor just as close as the United States. Actually, as you can discover from a globe, Rio de Janeiro is closer to Lisbon, Portugal, than to New York.

Argentina Is Different

Food to spare. The international trade of Argentina gives us a clue to what the country is like. More than four-fifths of its exports are products of the ranch lands and farm lands—meat, wheat, corn, linseed from flax, wool, hides and skins, and a few others. This is in line with what you read earlier about ranching and farming in Argentina (pp. 46-47, 96-97). The chief imports are much like those of Brazil. As a whole, Argentina is poor in minerals. In resources, trade, and in work,



© *Ewing Galloway*

Figure 269. Where horses compete with trucks

small, neighboring Uruguay is much like Argentina.

Much of the trade of Argentina moves over the excellent railroads which fan out from Buenos Aires (p. 383). Products also move by boat on the Paraná River, and by ocean ships along the coast. At freight yards and docks, it is common to see fine horses like those in the picture above. Nevertheless, horse-drawn wagons have not held their own against modern trucks.

A farm country? It is true that the resources of the soil and the grasslands are of supreme value in Argentina. Farming and ranching are the foundations of the nation's prosperity. Yet it may be misleading to say that Argentina is, therefore, a farm country. For it may be that only about one-third of Argentine workers are needed to do all the work on the farms and ranches. Most people live in towns and cities, as in the United States. This is in definite contrast with the rest of South America (graph, p. 268).

Progress. Argentina is less than one-third the size of Brazil, both in area and in population. Yet Argentina has more miles of railroad and highways, more trucks and automobiles, more telephones, more radio sets, and more foreign trade than Brazil, or any other nation in the continent. Its schools too are among the best, and in literacy Argentina is in the upper group of countries (pp. 392-393).

To find reasons for Argentina's progress, we must look into the past. About a century ago, the new industrial cities of Europe (p. 56) needed ever-increasing supplies of food. Argentina's land was well suited to produce surplus food. Much European capital was invested in land and in transportation, so that Argentina could produce the needed food, and get it to deep water. There, the new, fast ships could move it across the sea. Some Argentine leaders, too, saw the value of education for all, and developed fine schools. So, for various reasons, Argentina has grown to be the kind of nation it is today.

Argentina and the United States. Argentina has the same kind of ties with Europe that Brazil has, growing largely out of its history. But Argentina does not have the same

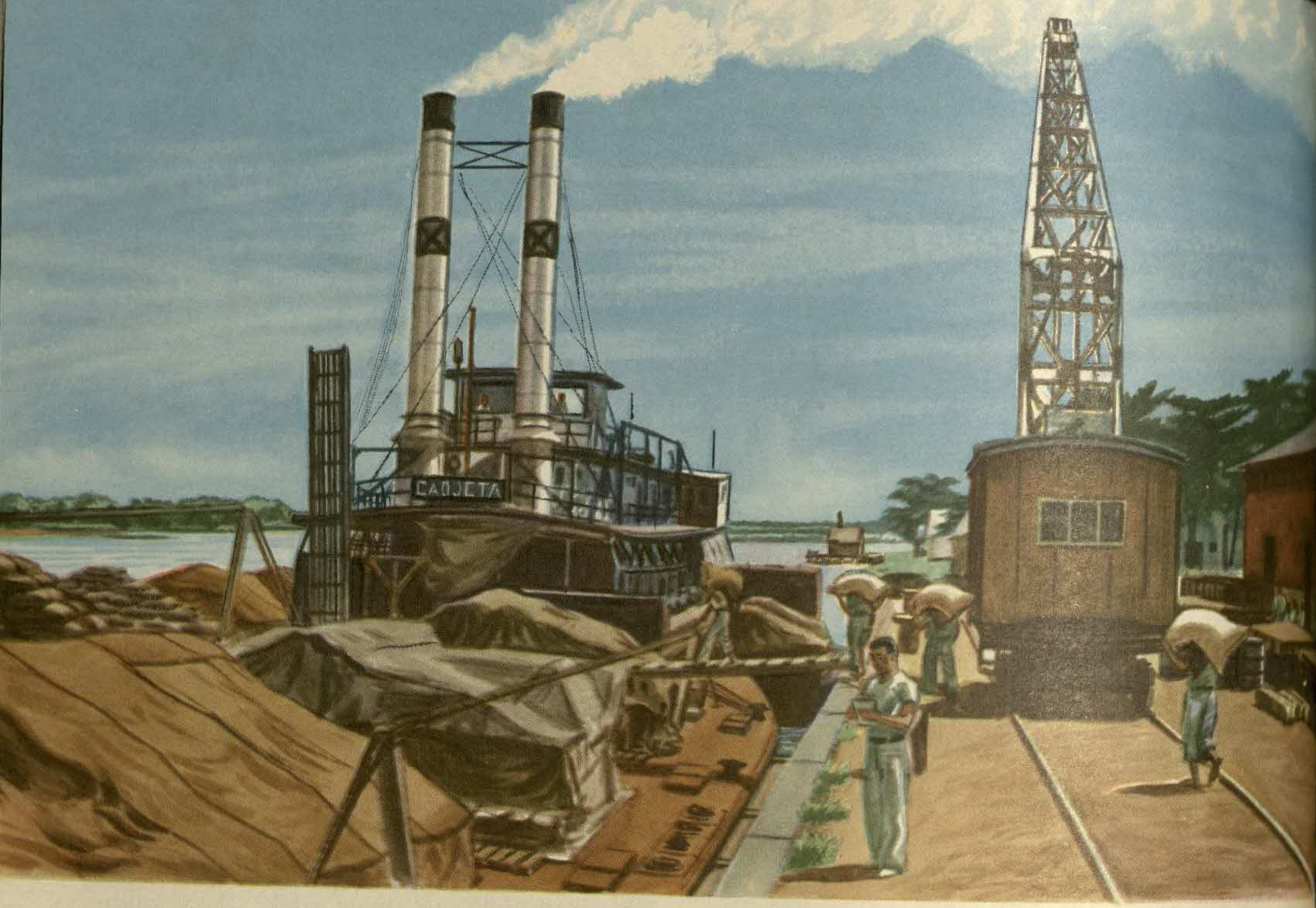


Figure 270. A water highway in Colombia

From photo by Ewing Galloway

ties with the United States. One reason is that Europe, particularly Britain, is Argentina's best customer, and in normal times supplies most of her imports. On the other hand, the United States and Argentina are competitors in the export of grains and meat products.

Countries of the Andes

Where minerals are important. On the map on page 268, you can count about 20 red triangles in the countries of the Andes, from Venezuela to Chile. In the rest of the continent there are not nearly so many. This suggests that the countries of the Andes dominate the continent in the production of minerals. In some years, the mineral production in the countries of the Andes is more than 10 times the value of the minerals produced in the other countries of South America.

In all the countries of the Andes, except Ecuador and Colombia, some mineral product is the leading export. And in these two countries, minerals are in second place.

Venezuela and Chile are by far the leading producers. In Venezuela, it is petroleum that over-shadows all others. In Chile, it is copper, though nitrate also is important. Bolivia is noted for its tin. Other minerals, found in varying amounts in the Andes, include gold, silver, lead, and tungsten.

Routes and trade. If you look again at the map on page 383, you will understand why the ocean is the main highway for the countries of the Andes. Railroads reach inland to mining centers thousands of feet above sea level, in Peru and Bolivia, particularly. Except in Chile, few of the railroads run parallel to the seacoast. Fortunately, however, many of the mines are fairly close to the seacoast. In Venezuela, for example, most of the oil derricks stand in or on the edge of

Lake Maracaibo (p. 383), which is connected by water with the ocean.

The picture on page 276 shows a port on the Magdalena River, the only river highway of any consequence along the western coast. The men in the picture are loading coffee and cinchona bark on the steamer. The first is a product of Colombia's highland farms; the other is a forest product. The medicine quinine is made from cinchona.

Since the Andean countries are not advanced in manufacturing, the minerals are produced mainly for export. Most of these minerals go to Europe, not to the United States. Yet every country in the Andes imports more goods from the United States than from any other nation. This is an illustration of how roundabout and complicated foreign trade may be (pp. 182-183).

Other workers. This emphasis on minerals must not lead us to think that most workers in the Andean countries are miners. A comparatively few thousand miners can produce the minerals which many millions of people use. A large majority of the workers in Andean countries are farmers or townspeople.

The Moche community. No one community can be entirely representative of all the many communities. The larger cities of western South America in many ways resemble such cities as São Paulo. However, many more people live in the smaller towns and cities than in the larger ones. The Moche community in Peru will illustrate what you might see in most of the smaller towns in western South America. The check list for studying towns and cities (p. 162) will help us get an over-all view of the Moche community.

Natural setting. Moche is a coastal community, almost halfway between Callao, Peru, and the northern boundary of the country (p. 383). The town of Moche lies on a plain within the last bend of the Moche River, before it empties into the Pacific. This stream rises in the Andes, and gives life to several communities besides Moche. This is a desert coast, and without water for irrigation few people could make a living here.

Size. Nearly 4000 people live in the so-called Moche district, which includes the town itself and the surrounding farm lands.

History and people. The story of Moche seems to go back hundreds of years. Nearly two hundred years ago a writer described the people of Moche as "dedicated to agricultural work and generally to being fishermen."

Moche is sometimes spoken of as an Indian community, because the ancestry of most of the people is chiefly Indian. A number of old Indian customs have survived to the present time. But Spanish influence has been strong, and some people with Spanish blood have settled in the town. So the people of Moche today are, in a sense, neither Indian nor Spanish, but a blend of the two.

Streets and buildings. The town is laid out in a checkerboard pattern, surrounding a central plaza. Many streets are paved, and a few streets near the plaza have sidewalks.

Nearly all the houses are made of adobe, and stand side by side, making a solid wall facing the street. The roofs are flat or slope only gradually, and may not be water-tight. This is not important, however, since there may be years between one shower and the next. Most of the floors are hard-packed earth. The home furnishings are very simple.

Connections. The Pan American Highway passes through the outskirts of the town. Another highway connects Moche with Trujillo, a small city about five miles away. There is regular bus service between these two communities.

There are only two telephones in the town, one at the telephone company headquarters, the other at the police station. The post office handles both mail and telegrams, but no mail is delivered to the stores or homes. About 15 pieces of mail, on the average, arrive each day. This is little for so large a community. Not more than eight people have radio sets. The bus regularly brings some newspapers from the cities. These usually are read in daylight, since there is no electricity. Homes are lighted by candles or oil lamps.

Work. Many of the men in Moche are farmers, whose irrigated fields surround the town. Corn, alfalfa, sorghum, beans, and sweet potatoes are familiar crops. There also are some full-time fishermen.

Manufacturing is simple and of little importance. Workers make baskets and mats for sale. There are also dress shops, tailor shops, and bakeries. Some men make fireworks for a living.

Trade is centered in the shops near the plaza, which carry small stocks of food, cloth, dishes, refreshments, and so on. Peddlers come frequently to the town.

Scarcely anyone is engaged in transportation, for the bus drivers do not live in Moche. The farmers have donkeys for carrying loads to and from the fields.

The list of special services is not long. A mayor and other officials are responsible for government. They see to it that the water system is maintained, for example. This system consists of a windmill, a tank, and pipes leading to six public outlets in various parts of the town. The town has several policemen. The streets are lighted by kerosene lamps hung at street corners.

Perhaps one week in the month, there are motion pictures in a small theatre. Several professional musicians live in Moche, and at least one person makes his living as a scribe, reading and writing for people who cannot read or write. There are several barbers in the town, and various repairmen, such as the blacksmith and the tinsmith.

Moche has two small schools, one for boys and another for girls. It may well be that within a few years most of the younger people will know how to read and write. There is a priest in the town, but no physician, or dentist, or banker. People supposedly keep their money in boxes hidden somewhere in their homes.

South America and the World

The continent as a whole. As you have seen, South America, as a continent, is a producer of raw materials, and an importer of manufactured goods. In this land, many people continue to toil in the old ways, using the power of men and of animals, knowing little of the newer ways of working. In most areas transportation is slow and difficult. Millions of people never read a newspaper, have never seen a doctor, and take little part in the affairs of government. Most of them have no telephones or radios. Education may be neglected. They may have very vague ideas about the rest of the world.

Yet so great is the variety of people, as well as of land, in South America, that these statements can apply to most but *not* to all South Americans. Almost the opposite may be said of millions of people who live in Argentina, Uruguay, southern Brazil, and in the cities of every South American country. Argentina, as you know, is an urban, not a rural, country. Uruguay's health program has been praised widely. Many farmers in southern Brazil and in Argentina, as well as some in Chile and Colombia, for that matter, may well take pride in their fine livestock and machinery.

A typical South American. Who, then, may be considered a typical South American —a Jivaro hunter, an Indian miner, a worker on a cacao plantation, an Argentine gaucho, or a Brazilian merchant? No one of these is really typical of the continent. Each is typical of a certain group. This great variety of people is another important fact about the general character of South America.

Interdependent. The globe photograph on page 279 is a reminder that the various South American peoples do not live to themselves alone. As you have seen, the continent has many ties both with Europe and the United States.

The interdependence of South America and the world was demonstrated in striking fashion during World War II. There was a shortage of ships for carrying South American trade, and enemy submarines prowled the Atlantic. The United States and Europe had to get along without some of the coffee, cacao, meat, grains, and other products which they normally got from South America. In turn, South America had to get along with less coal and fewer manufactured goods.

A problem and a promise. For centuries South Americans have struggled with the problem of the hollow interior of their continent. How should it be used? How could the vast resources in it be developed? Now the world looks with keen interest at the same thinly settled interior land.

Europe, for example, has millions of people, whose homes have been destroyed or whose lands have been lost, chiefly because of war. Should they be helped to settle in large numbers in the empty lands of South America? If so, they might turn a wilderness into thriving communities. But first some enormous problems would have to be solved. Money would have to be invested. Transportation routes would have to be built. The hollow center of the South American continent remains, then, both a problem and a promise.

Helps in Learning

1. *A puzzle.* In the northern part of one country in South America mining is the most important kind of work. In the middle part there is both farming and mining, together with other kinds of work. The southern part of the country is little used. What country is it?

Prepare other puzzles about South American countries, and see if your classmates can guess the answers. You may want to use the maps and statistics (pp. 368-400) in making your puzzles.

2. Suppose the Amazon trader wished to buy and sell goods in Lima, Peru, which is about the same distance away as Manáos. Why might it be difficult for him to do so (maps, pp. 383, 388)?

3. Tell of one or two ways in which Brazilian farm towns resemble farm towns in the United States. Name a few ways in which they differ.

4. Would you expect more, or fewer, special services in São Paulo than in the farm towns of Brazil? Why?

5. Which of Brazil's exports do you recognize as things which the United States imports (p. 255)? Which of Brazil's imports may well have come from the United States (p. 254)?

6. Make a list of ways in which Argentina and Brazil differ.

7. Compare the maps on pages 268 and 383. Which kinds of work seem most common in the Andes? Which seem almost entirely lacking?

8. Explain how mining can be important in an area where only a small part of the population is engaged in mining.

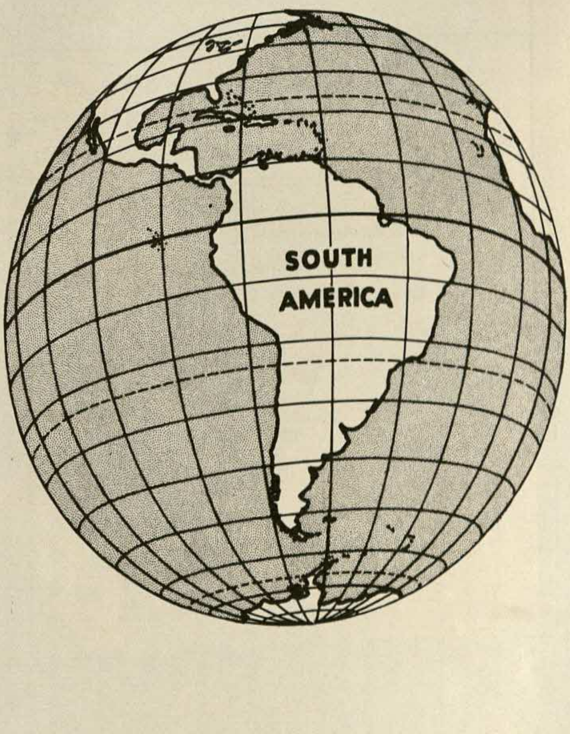
9. Why should you expect fewer river highways reaching inland from the western coast of South America than from the eastern (p. 383)?

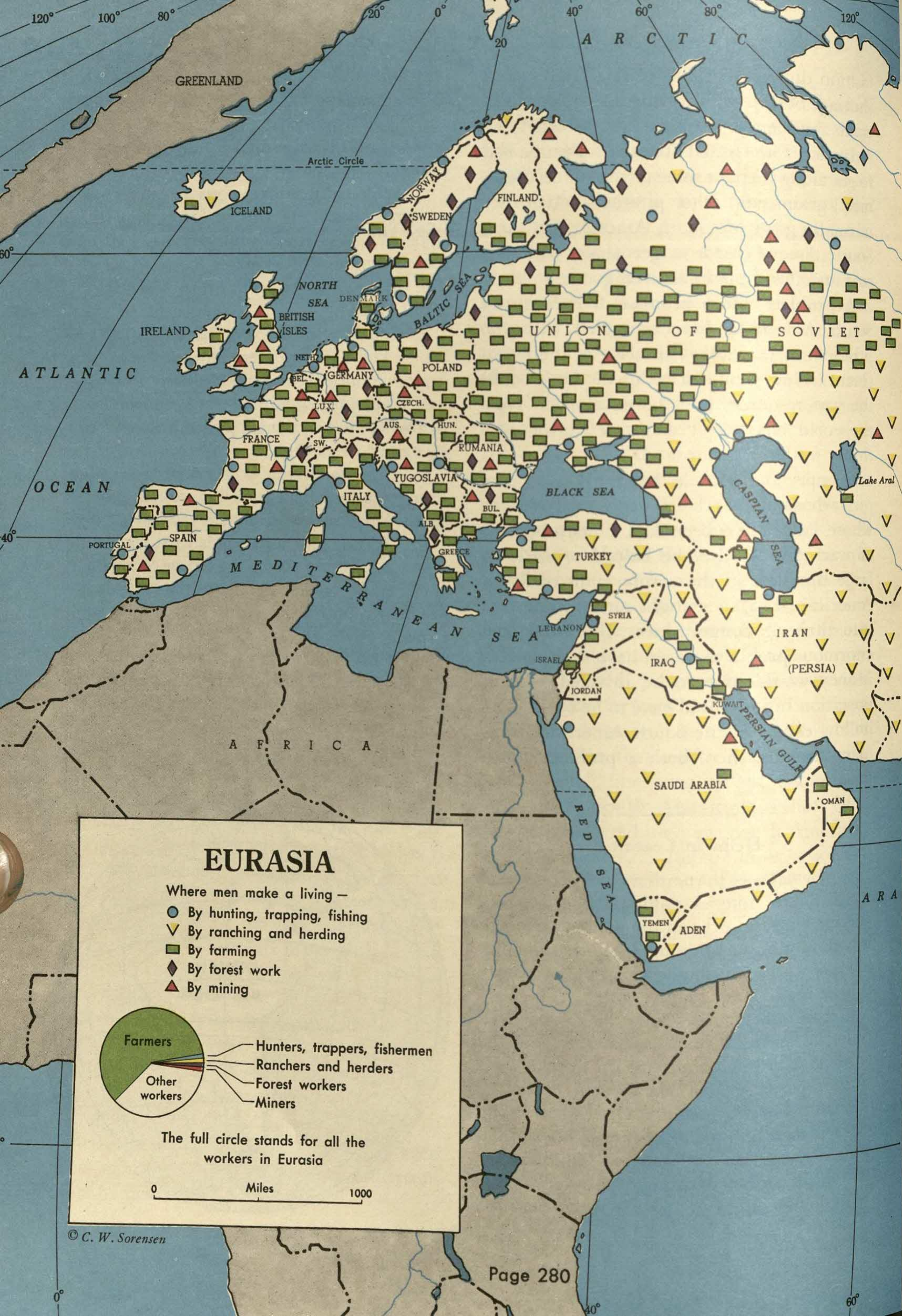
10. Tell in your own words what you would expect to see if you visited the Moche community.

11. How did the opening of the Panama Canal help countries in South America (p. 383)? Explain why.

12. How might better education for the people of South America affect the miners, the farmers, the scribe in the Moche community?

Figure 271. South America on the globe





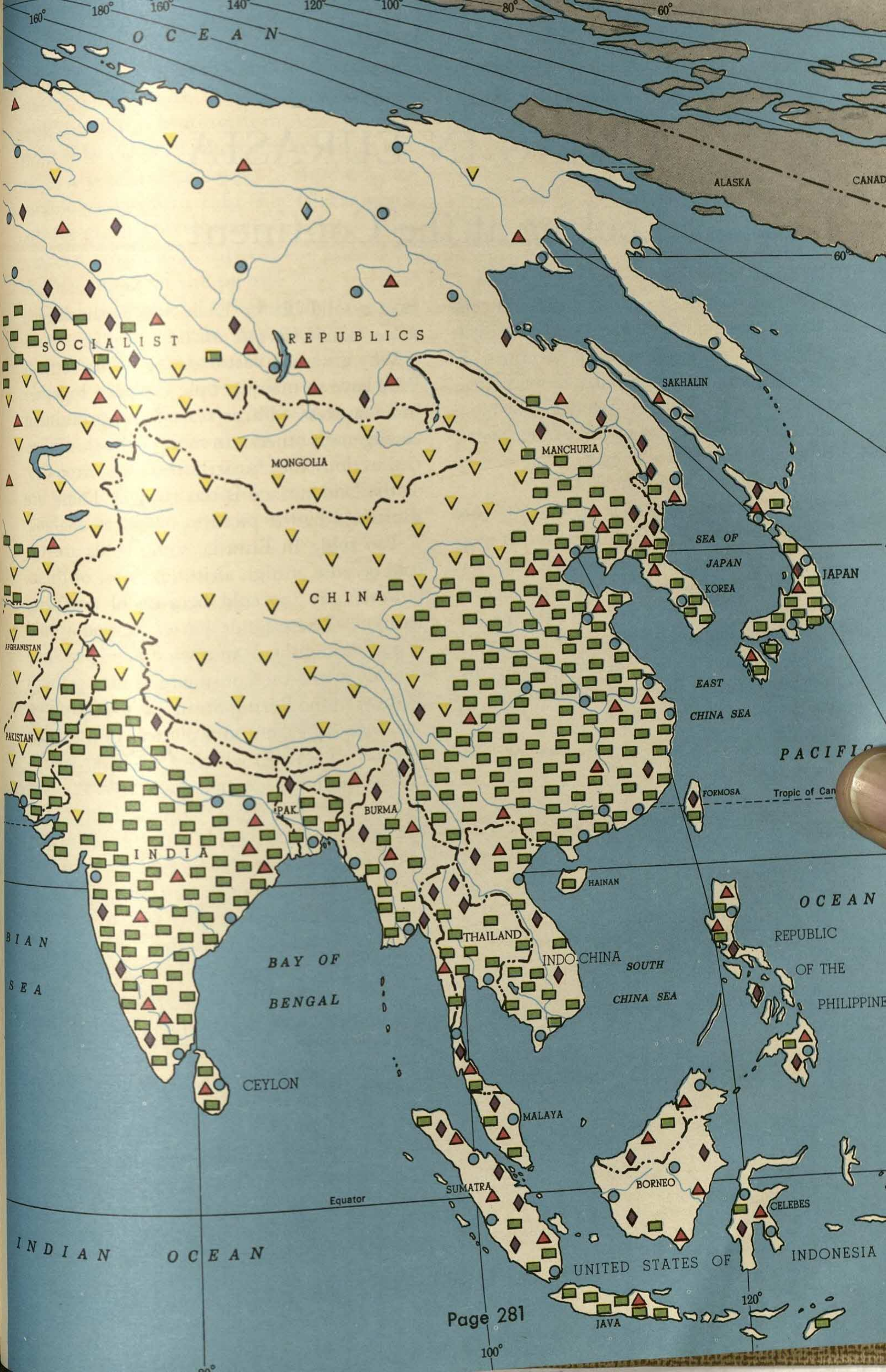
EURASIA

Where men make a living —

- ● By hunting, trapping, fishing
- V By ranching and herding
- 🟩 By farming
- ◆ By forest work
- ▲ By mining

The full circle stands for all the workers in Eurasia

© C. W. Sorensen



160°
180°
160°
140°
120°
100°
80°
60°
OCEAN
ALASKA
CANAD
60°
SOCIALIST
REPUBLICS
SAKHALIN
MANCHURIA
MONGOLIA
SEA OF
JAPAN
JAPAN
KOREA
CHINA
AFGHANISTAN
EAST
CHINA SEA
PAKISTAN
PACIFI
FORMOSA
Tropic of Can
PAK.
BURMA
INDIA
HAINAN
OCEAN
BIAN
SEA
BAY OF
BENGAL
THAILAND
INDO-CHINA
SOUTH
CHINA SEA
REPUBLIC
OF THE
PHILIPPINE
CEYLON
MALAYA
SUMATRA
BORNEO
CELEBES
Equator
INDIAN
OCEAN
UNITED STATES OF
INDONESIA
JAVA
120°
100°
80°

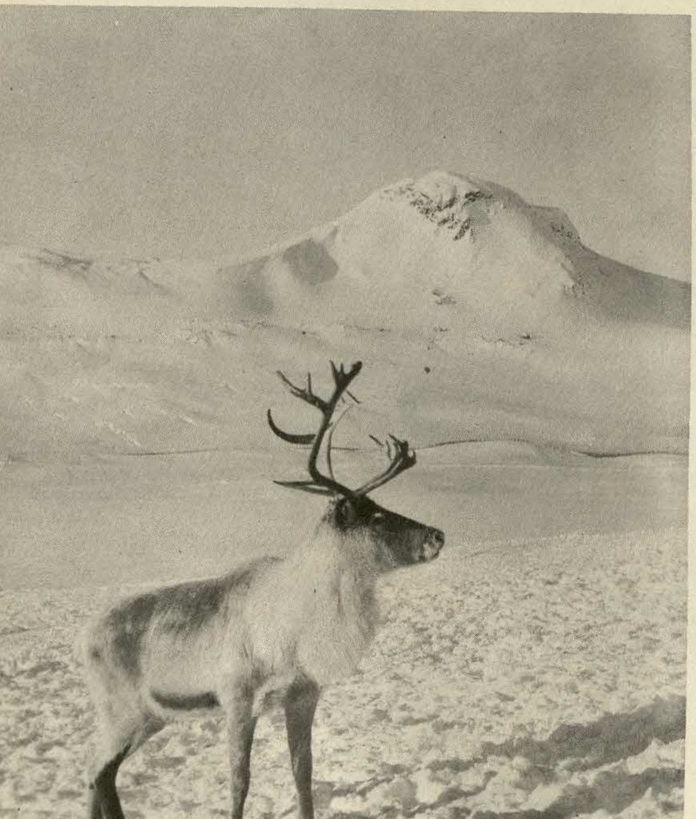
LIVING IN EURASIA

Looking at the Continent

Eurasia is the giant of the continents. About three-fourths of the people on earth live there. The graphs and statistics (pp. 396-400) tell us that Eurasia is more than twice the size of North America, and more than six times the size of the United States. The continent actually extends more than half the distance round the globe.

Eurasia as the home of man. One of many extraordinary facts about Eurasia is that most of the people live crowded together on considerably less than half of the land area of the continent. This is shown clearly by the population map, pages 370-371. At least two-thirds of the continent has scarcely any inhabitants. But in three areas, Europe, India-Pakistan, and China-Japan, the dots are crowded so close together that they form almost a solid black. Each dot, as the legend states, stands for *one million people*.

Figure 273. In a cold land © *Monkmeyer*



Why are some vast areas so thinly settled? Why have so many people crowded together in a few areas? Three reasons are prominent among many others. In most of the thinly settled sections, the climate is too cold or too dry, or the land surface is too rough. These are illustrated by the pictures on pages 282-283.

Too cold. In Eurasia, some lands are too cold because of high altitude. Most of them, however, are too cold because of northerly location. These lands lie where you would expect to find them, in a wide band reaching entirely across the continent, from northern Norway to the Bering Strait. The picture on this page was taken on a plateau in northern Norway. There, in winter, it is bitterly cold, and it does not get warm enough in summer so that crops will grow. One of the few animals that can thrive in this climate is the reindeer, shown in the picture. These animals dig down through the snow with their hoofs. There, underneath the snow, they get the moss which is their winter feed.

The map on pages 280-281 shows a few symbols for ranching and herding in these cold, northern lands. In most instances they stand for reindeer herding. These cold lands also have a few hunters, trappers, fishermen, and some scattered forest workers and miners. In the entire area, however, there are not as many people as there may be in a single city in Europe. Because of the intense cold, it is not a good home for man.

Too dry and too rough. The picture on page 283 shows some land which is too dry to be very useful, and some that is far too rough. This picture was taken in Jordan, a small country in southwestern Asia (pp. 386-387). The rainfall there is less than 10 inches a year (pp. 372-373). Farming is impossible with so little rain. The land is useful only for grazing, even where it is level. And it takes many acres to support one small flock like that shown in the picture.

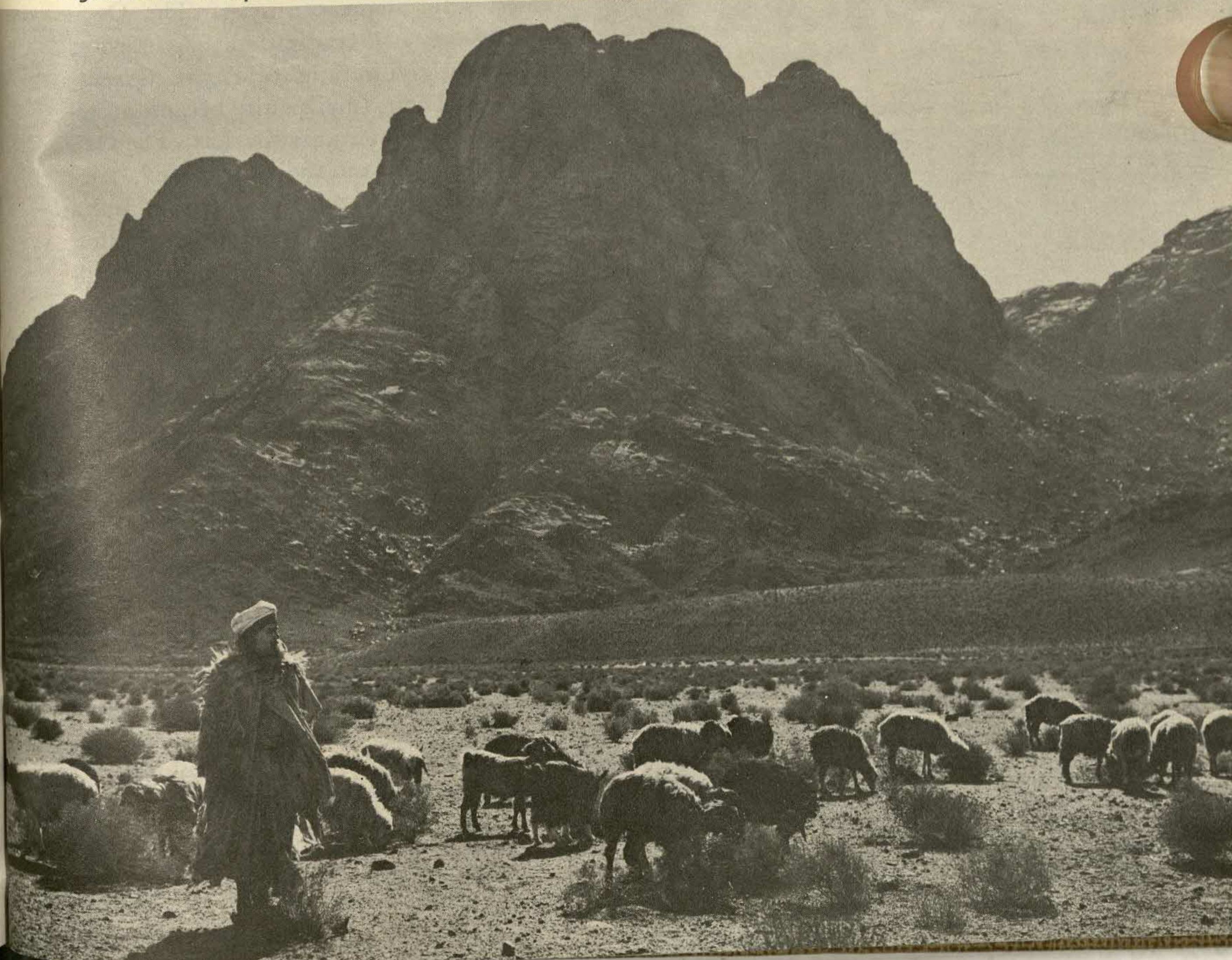
This is part of a wide belt of dry land that reaches across Eurasia, from the Mediterranean Sea to northern China. It is chiefly a land of ranching and herding, as shown on the map (pp. 280-281). Lack of water has made it impossible to do much else with it.

In the background of the picture below, you see mountain lands, too, that are far too rough to be of much use to man. Eurasia has hundreds of thousands of square miles of such mountainous land which is unsuited to much use by man. The land forms map (pp. 380-381) shows that these mountain lands also reach almost entirely across the continent, with few breaks between Spain and China. Some of these mountain lands are also cold, because of elevation.

More useful lands. What areas are left, then, in Eurasia, after marking off those that are too cold, too dry, or too rough for much settlement? Three areas remain, as shown on the population map—Europe, India-Pakistan, and China-Japan (pp. 370-371). On the map showing the use of natural resources (pp. 280-281), the same three stand out boldly as lands where the work of farming is widespread. As you would expect, these areas are outstanding

Figure 274. A dry and mountainous land

© *Matson Photo Service*



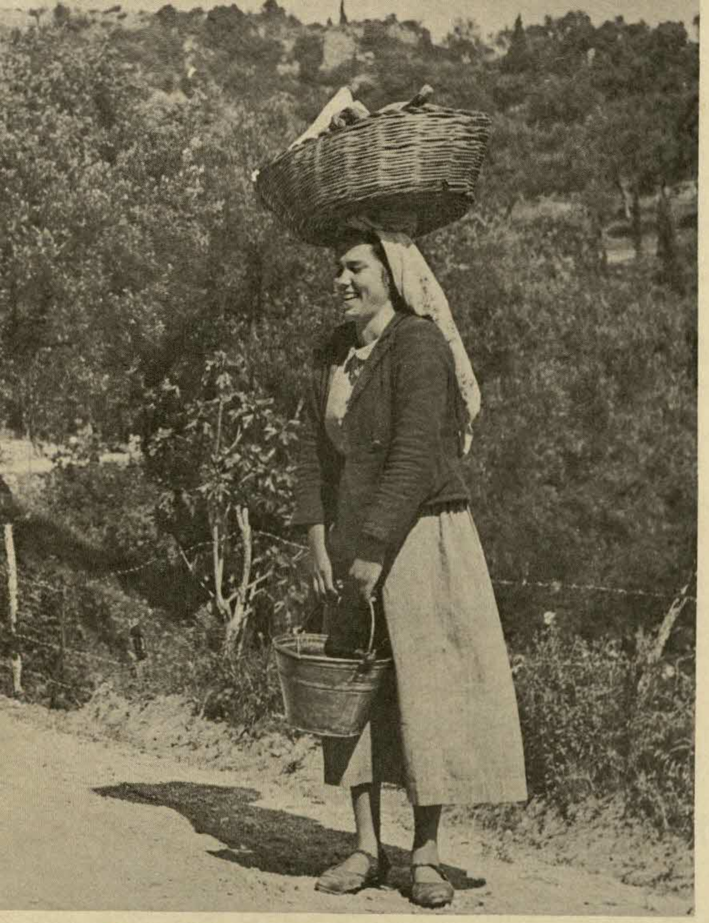
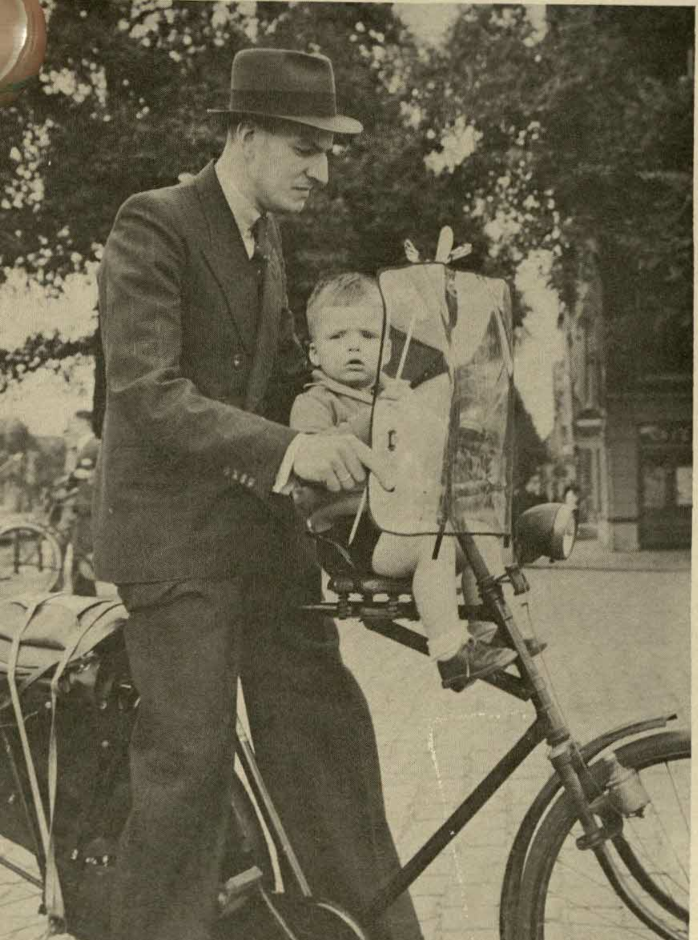


Figure 275. In Greece © *Monkmeyer*

Figure 276. In the Netherlands © *Ewing Galloway*



on other maps, including the rainfall map (pp. 372-373), the map of cultivated lands (pp.384-385), and the transportation map (pp. 388-389). In many different ways, then, these three regions are different from the other lands in Eurasia. Most of these differences grow out of the fact that these lands have particular advantages as homes for man.

Occidental and Oriental. The pictures on these two pages show a few of the people of Eurasia. Those shown on this page live in Europe. Those on the opposite page live in southern and eastern Asia. One could point out certain well-known differences between the two groups. The people on the left belong to the white race. It is sometimes said that they are Occidentals, which means western people. Those on the right are often called Orientals, meaning eastern people.

In general, these groups represent two different civilizations, which grew much by themselves for many centuries. The Occidental, or western, civilization, has its roots in the early civilizations of Egypt, Greece, and Rome. Later, Christianity became an essential part of western civilization. The Oriental civilization, on the other hand, goes back to early developments chiefly in India and in China. Several religions, including the Mohammedan, the Hindu, and the Buddhist, came to be very important to the eastern peoples.

Some of the noticeable differences between these two civilizations today are in the way the people worship, and in the way they dress. However, the importance of these and other differences may easily be over-emphasized. After all, a different style of clothing, for example, does not mean that the people themselves are different. Furthermore, many Orientals are learning to wear western style clothing, for example, the man in Figure 277, who is a factory worker in Japan.

There are, of course, similarities as well as differences. The people worship differently, but they all worship. Family life is not exactly alike in East and West, but love of family is common to all civilizations. The man in the Netherlands (Fig. 276) watches carefully to see that the child does not fall. The mother and son in India (Fig. 278) are carrying lunch to the father who is working in the field.

All peoples have in common, also, their dependence upon work in order to make a living. As you can see by the map on pages 280-281, men use the same basic natural resources on each side of the continent. Factory workers may be found in both East and West, although, in general, the per cent of factory workers is higher in the western countries. Yet Greece, and some other European countries, are more definitely agricultural lands than Japan, for example. Figure 275 shows a farm woman in Greece, either on her way to market or returning from it. In work, at least, she has much in common with the woman shown in Figure 278.

Lands of many peoples. In southern and eastern Asia and the near-by islands live more than a billion people—half the total population of the world. Day by day these peoples are becoming much more closely connected with the work and the problems of the rest of the world. What happens in these lands may directly affect all other peoples everywhere. We may well take a look, then, at these lands and what is happening in them.

Helps in Learning

1. On the world population map (pp. 370-371), find the three areas in Eurasia which stand out boldly as areas of dense population.

The area in western Europe includes what island country? The area in eastern Eurasia includes what island country?

2. What does each dot stand for on this population map? What is the largest number of people you have ever seen gathered together in one place? How many such crowds would have to be gathered together to make a vast crowd of a million people?

3. According to this population map, do

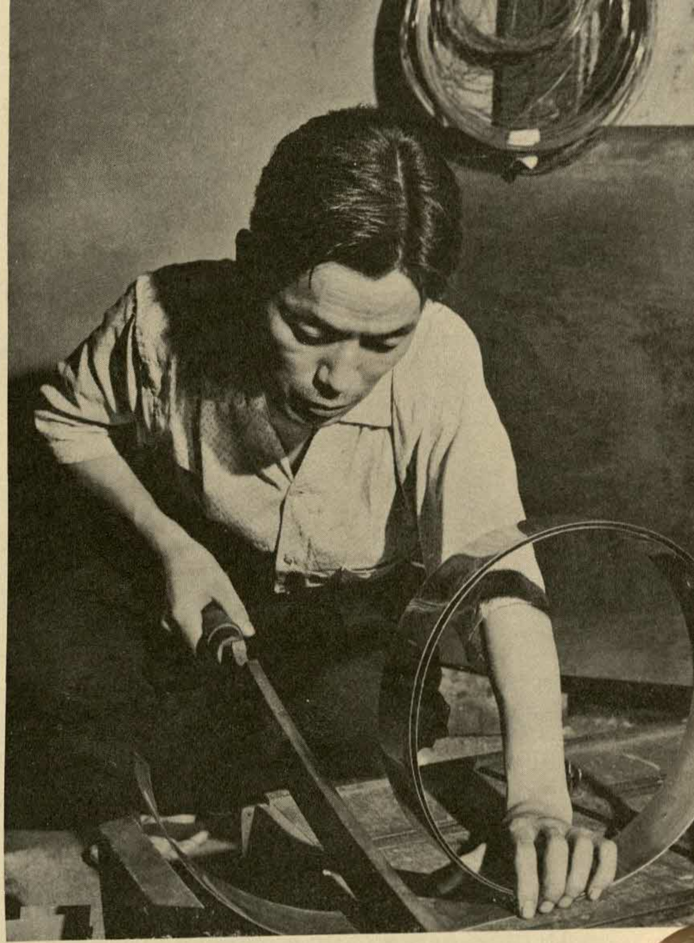
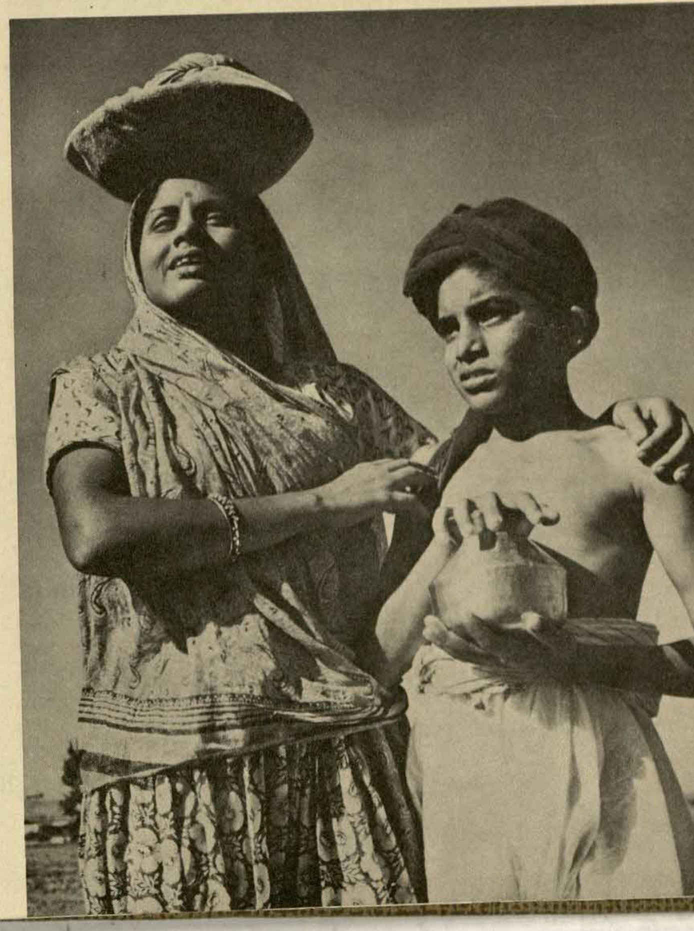


Figure 277. In Japan © *Ewing Galloway*

Figure 278. In India *Courtesy Gov't of India Information Services*



many, or few, people live in the part of Eurasia which lies more than 60° north of the equator?

Does *nearly empty,* or *crowded,* describe the western part of China? Which describes the peninsula of Arabia?

What reasons can you give why few people live in northernmost Eurasia? In western China? In the peninsula of Arabia?

Which maps in the atlas (pp. 368-395) help to explain why these vast areas are nearly empty?

4. How does the rainfall map (pp. 372-373) help to explain the tremendous importance of farming in Europe, in the China-Japan area and in India and Pakistan?

5. "Family life is not exactly alike in East and West, but love of family is common to all civilizations." How do the bottom pictures on pages 284 and 285 illustrate this?

Southern and Eastern Asia

The pattern of countries. The area that we speak of as southern and eastern Asia lies south and east of western Europe and the Soviet Union (pp. 386-387). The westernmost countries are Turkey and Israel. Japan and the Republic of the Philippines are farthest to the east.

Slightly more than half of the people in this great area live in independent countries. All the others, totalling some 500 million people, live in lands that have close political ties with countries in western Europe. Usually these political ties do not mean the relationship of a colony to the mother country. India, Pakistan, and Ceylon, for example, govern themselves, and may be considered independent nations. Yet all three of these have chosen to remain in close association with Britain and the other lands within the Commonwealth of Nations.

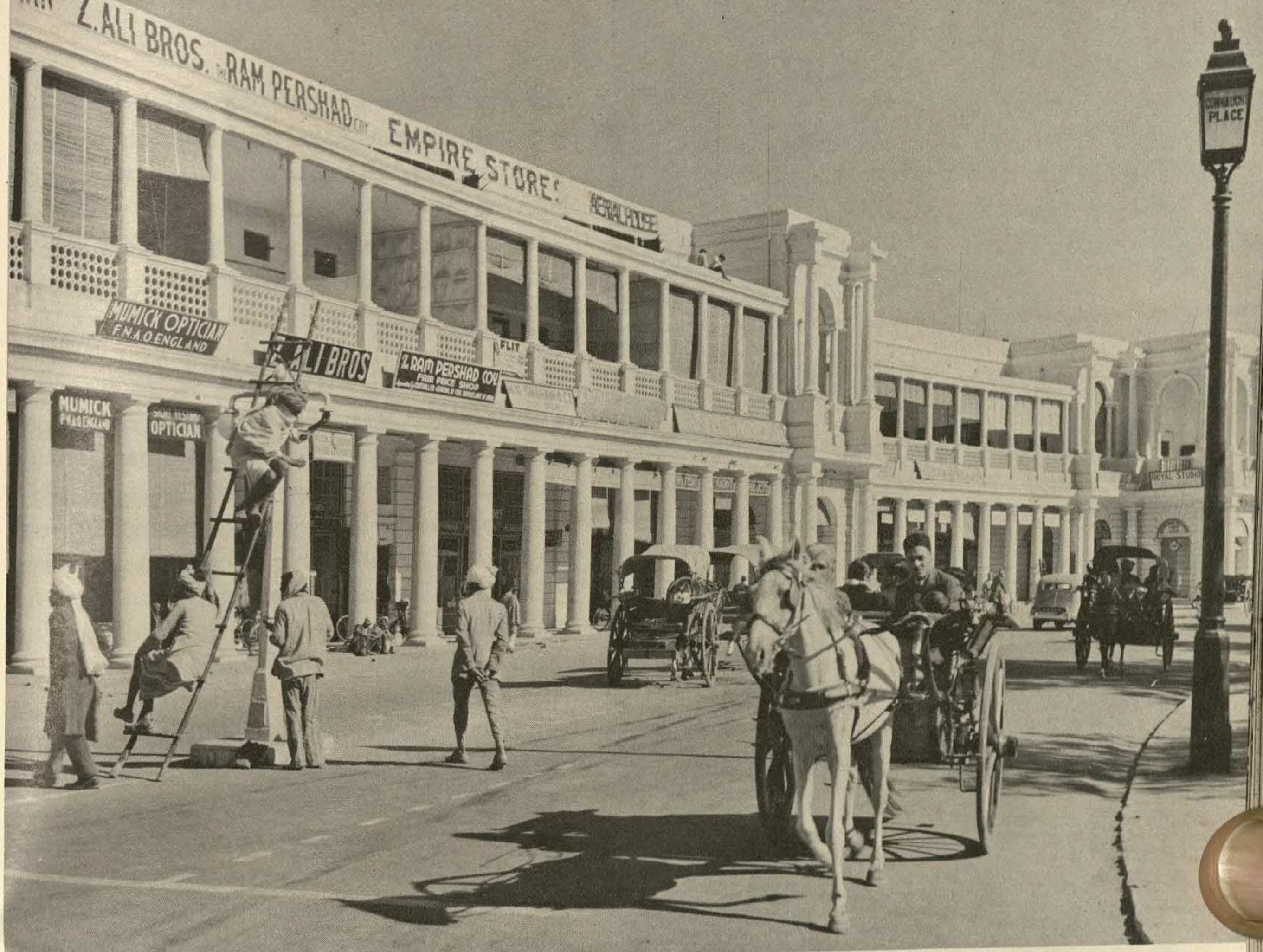
In a general way, nevertheless, it is correct to speak of one group of countries as entirely independent, and another group as connected politically with western Europe. This second group includes chiefly the United States of Indonesia, Indo-China, Malaya, Pakistan, India, and Ceylon.

Where East meets West. The picture on page 287 was taken in the Republic of India. Here the East and the West, the Orient and the Occident, are in direct contact, especially since India is associated with the Commonwealth of Nations. In the picture, most of the people are Indians. Most of the vehicles are more common to the East than to the West. Yet the signs are printed in a language of the West. And the customers in the shops include people from both East and West.

In many places, this meeting of the Orient and the Occident has been, and is, a friendly meeting. Each side is happy to do business with the other, and to learn from the other. But it has not always been so; nor is it so everywhere today.

Europeans came to Asia for trade, to begin with. Hardy sailors in small ships sailed around southern Africa and on across the Indian Ocean. There they traded for spices, perfumes, dyes, silk cloth, and other Oriental products which were in demand in Europe. As business increased, great trading companies were established. Political control gradually followed the trading ships. The British controlled India; the French, Indo-China; and the Dutch, the islands of the Indies; and so on. After a war with Spain (1898), the United States gained control of the Philippines. Finally, all southeastern Asia, except China, Korea, Japan, and Thailand, became the colonial possessions of European powers and the United States.

Recently this pattern has been changing. The Philippines were granted independence from the United States. Burma withdrew entirely from the Commonwealth of Nations, with British consent. Pakistan, India, and



© *Frederic Lewis*

Figure 279. A meeting of East and West

Ceylon achieved complete self-government, with the right to withdraw completely if they wish to do so. In the East Indies, the United States of Indonesia has been set up. Although a free nation, Indonesia chooses to maintain some connection with the Netherlands in Europe.

The future is not clear. Many of the peoples are troubled and restless. One thing appears certain. Native peoples will have more rights of self-government than ever before. Even if certain lands maintain political ties with Europe, they will no longer be called colonies. The eastern peoples seek to emphasize that they are the equals of western peoples. They believe they should be partners with the peoples of the West, not colonies which belong to the West.

There are many problems, then, which remain to be solved, in southern and eastern Asia. No one can be sure what the pattern of the nations will be in the years ahead.

People at Work

Rural and urban workers. The graph on the map on pages 280-281 shows that considerably more than half of the people of Eurasia work directly with the natural resources. Most of them are farmers. In southern and eastern Asia the rural people represent an even larger part of the total population.

The work of urban people in general was described in the chapter *This Is the City* (pp. 152-224). The illustrations were drawn, in the main, from urban life in the western world. Now, we can use the same outline

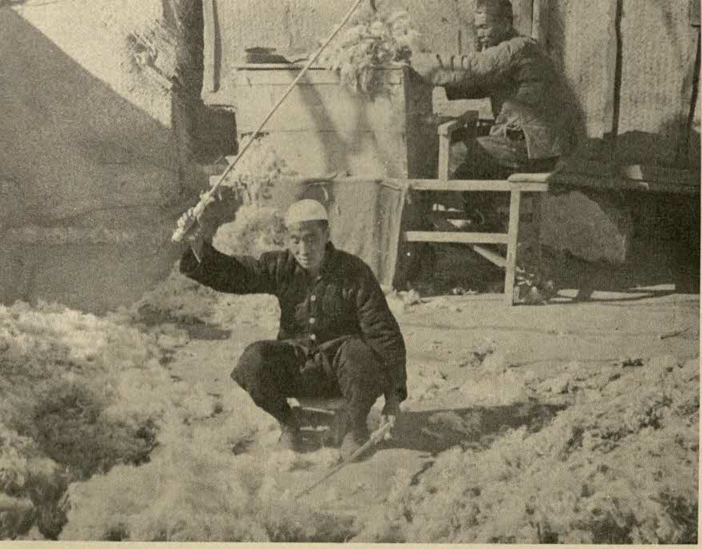


Figure 280. A backyard workshop © *Ewing Galloway*

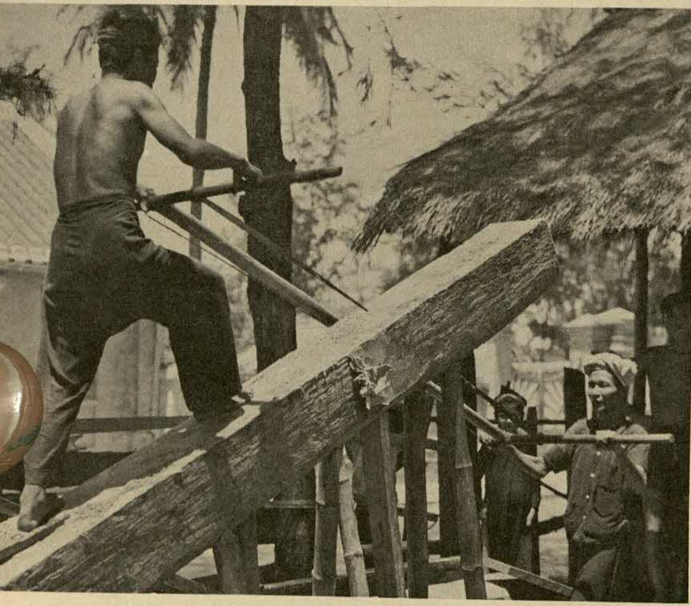
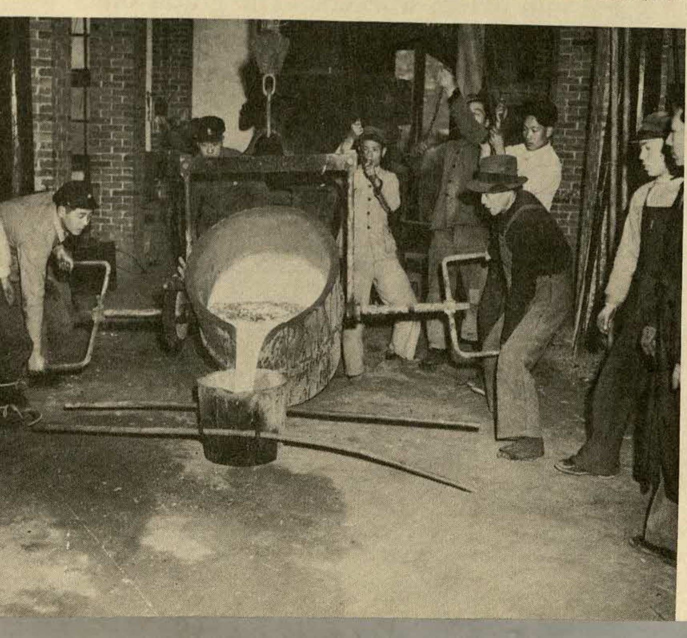


Figure 281. Using human power © *Ewing Galloway*

Figure 282. Working with iron
© *CNS Photos, Paul Guillumette, Inc.*



and discover how the urban people of southern and eastern Asia work, and how their work is related to the work of those who make a living directly from the natural resources. This is what is meant by *Fitting Things Together* (p. 225).

Manufacturing

The older ways. The men in the upper picture on this page work in the backyard of their home in Peiping, China (pp. 386-387). The man in the foreground is pounding wool to loosen the fibers. He pounds an armful of wool at a time, and when he has finished, he stuffs it into the top of the box-like machine in the background. The other man uses his feet to run this machine, pushing down first on one pedal, then on the other. Ropes connected with the pedals turn a simple mechanism inside the box, which straightens the wool fibers and combs the wool so that it is ready for spinning.

The people in the middle picture live in Indo-China. At this sawmill, rough logs are cut and shaped into useful boards. As you can see from the map on pages 280-281, there is forest work in this land.

In the lower picture, men are pouring melted iron from a large drum into a bucket, from which it will be poured into a mold. There it will harden into a casting of some shape and size needed for simple local industry. Because of the heat, the bucket is carried by means of two poles.

These three pictures illustrate the general character of manufacturing in most of southern and eastern Asia. It is largely household and workshop manufacturing (p. 166). The chief raw materials are those which are close at hand. The products, in the main, are the things needed in local communities.

The new ways. The pictures on page 289 show exceptions to the older ways of making things. The photograph at the top of the page was taken in India. It shows a blast furnace, and part of a steel mill where the processes resemble those shown on page 172. The lower picture shows men at work in a big factory in Japan. Both pictures, of course, represent heavy industry, and the factory type of work (pp. 164, 166).

Japan is by far the most industrialized nation in all southern and eastern Asia. As you will see, it differs in many ways from the other countries. India, too, is beginning to develop some industries, though it still has a comparatively small part of its workers engaged in manufacturing.

Slow growth. Why has modern manufacturing developed so slowly in these lands? The area has many raw materials; and certainly it has enough people to make a big market; and enough workers—three of the essentials of manufacturing (pp. 166-167). But the total buying power is small, where most of the people live close to the subsistence level. And the masses of the people do not have the skills needed in modern industry. Furthermore, the area as a whole is lacking in the development of power, capital, and transportation—three other great essentials. Much of the manufacturing now done in this area depends on the power of men's muscles.

Bit by bit, however, and year by year, manufacturing does gain ground in southern and eastern Asia. Perhaps, at some time in the future, great industrial districts will be developed there, rivalling those of the United States. Most of the natural resources are there, waiting for men to use them.

Trade

Many workers. Except for agriculture, the chief kinds of work in southern and eastern Asia are simple manufacturing and trade. All the familiar types of trade may be found —buying and selling raw materials, trade in partly finished goods, wholesale and retail trade, and international trade (pp. 178-184). Workers in retail trade outnumber the others,

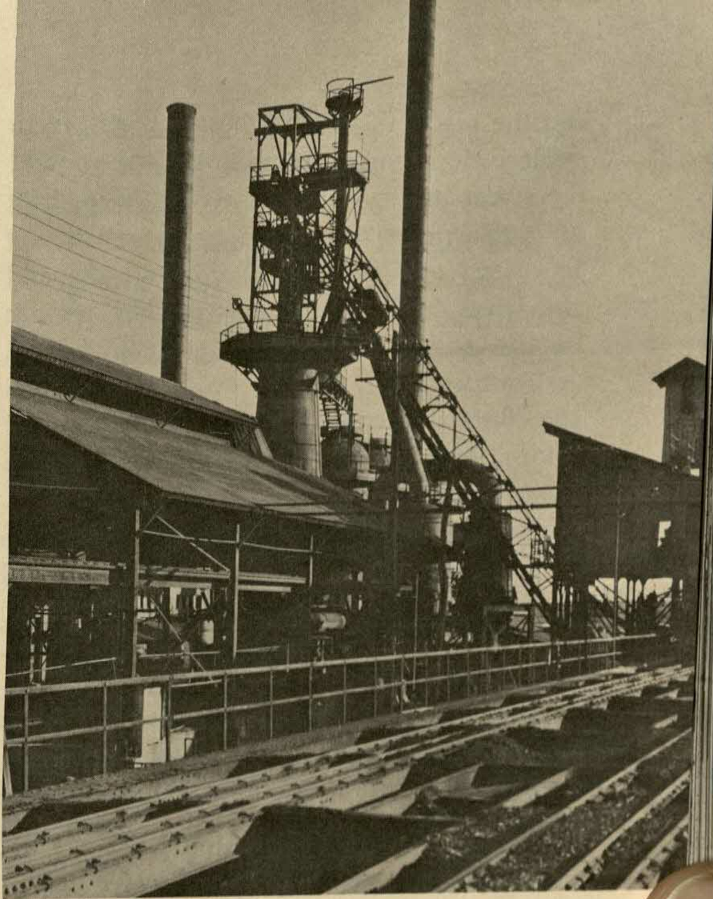
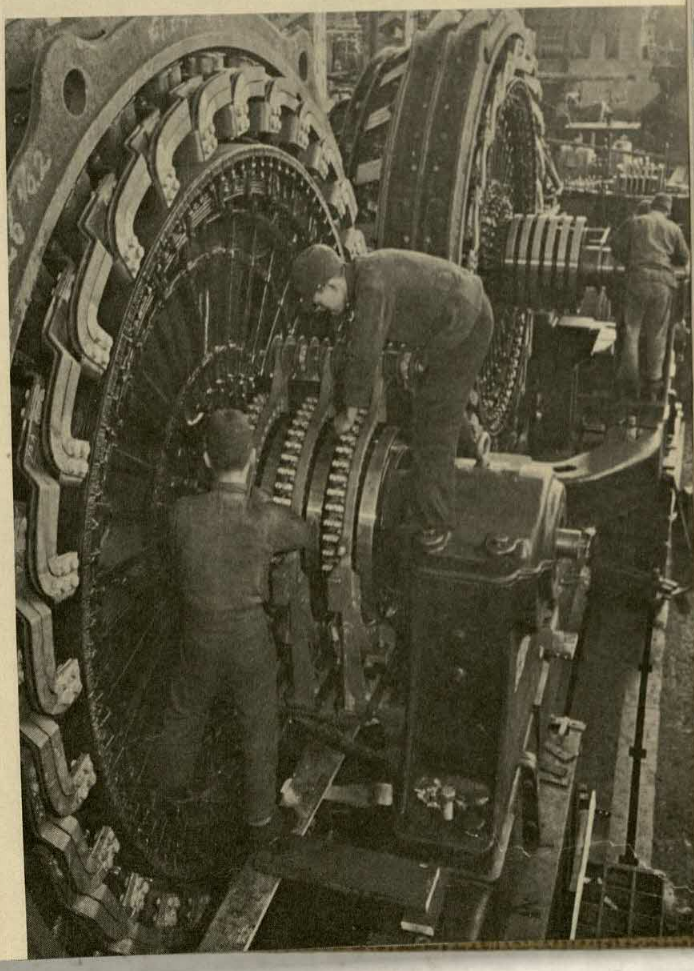


Figure 283. A blast furnace in India © *Gendreau*

Figure 284. Making electrical machinery in Japan © *British Combine*



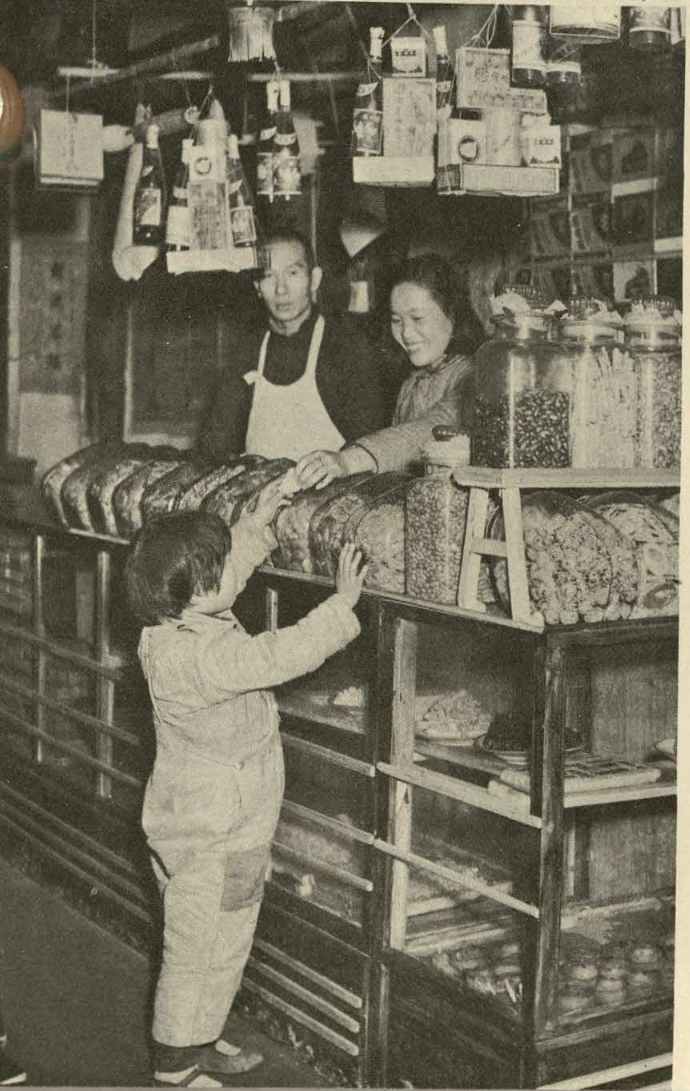
and the places in which they work vary from modern department stores to little shops and the street itself. You may recall the picture of a department store in Japan, page 182, the hardware peddler in Thailand, page 183, and the street in India, page 287. The picture on this page shows a candy store in China. In southern and eastern Asia, as a whole, the fine department store is uncommon. Shops, open-air markets, and peddlers are very common.

As you would expect, there is much trade between one nation and another. Burma and Thailand, for example, produce much more rice than they need. They sell their surplus rice to Japan and India, buying other agricultural products or manufactured goods in return. Java exports sugar to China.

The great bulk of the foreign trade of these nations, however, is with Europe, not with each other. Most of the nations in southern and eastern Asia need to import similar things—machinery and cloth, above all else. Most of them have raw materials to sell. Therefore, they cannot satisfy their needs by trading with each other. But Europe needs raw materials and has surpluses of manufactured goods.

Figure 285. A "sweet shop" in China

© *CNS Photos, Paul Guillumette, Inc.*



Transportation

Changes come slowly. The advances in transportation that followed the Industrial Revolution are still spreading through southern and eastern Asia. The white areas on the transportation map (pp. 388-389) are being filled in gradually. Local transportation remains poor in most places. But long lines of good transportation are cutting the lands of isolation into smaller and smaller pieces. This development, of course, is one of the keys to more trade and industry in the future.

The picture on page 291 shows one example of this changing pattern, in China. The road is old and, as you can see, not very good. But over it a modern automobile finds its way, though momentarily delayed while men repair the road. Almost behind the automobile there is a rickshaw, an old way of traveling. But there is another modern touch in the power line that follows the road.

Water transport. The picture on page 292 shows a water highway in China. A near-by village is famous for its pottery. Workers have brought some of their pots and bowls to the river bank or lake shore, shown in the picture. The pottery will move on to market by boat.

One boat in this picture uses mechanical power; the others are smaller boats using the power of the wind or of men's muscles. Most inland water transportation in southern and eastern Asia is represented by these small boats. There are many hundreds of steamers, some of them large, on the deeper rivers and canals. They are few, however, when compared with the tens of thousands of smaller craft.

Ocean steamers carry nearly all the trade from country to country, and of course to other continents. Southern and eastern Asia, as a whole, has few railroads leading from nation to nation. Nearly every country faces the sea, however. Millions of people live on islands. So for most nations the sea is the best highway for foreign trade.

Railroads, highways, and air routes. Soon after railroads were developed in Europe and the United States, men began to build railroads in southern and eastern Asia. To begin with, they built short lines, reaching inland from the main ports and out from the chief cities. In much of the area, little progress has been made beyond that stage. Two notable exceptions are in Japan and India-Pakistan. In Japan both electric and steam railways are highly developed. In India-Pakistan, there is a widely spaced network of rail lines over much of the land (pp. 386-387).

The picture on page 293 shows one way in which railroads serve Shanghai, China. These geese were raised on farms near-by, and probably were sold to a dealer in a market town. From there they were shipped by freight car to the city. The men will carry them to a poultry market, using large wicker baskets hung one at each end of a long pole.

Few new railroads are being built now in southern and eastern Asia. Instead, the people are turning to highways, and in some instances to airplanes—skipping the railroad stage. With all the progress, however, there is still only one automobile for every six or eight thousand persons in China. The United States, by comparison, has one automobile for about every three persons.

The map of air centers and air routes (p. 379) shows that many parts of southern and eastern Asia are well served by air transportation. This has helped people there enormously in making and maintaining contact with people in the rest of the world. Mail is carried rapidly to other continents and from one large city to another. So far, however, air transportation has not become a regular or routine form of transportation in any of these countries to the extent that it has in Europe and the United States.

Special Services

Government. In nearly every country in southern and eastern Asia, the government is in the hands of a comparatively few people. This is true of the independent countries as well as those that have close political ties with Europe. Most of the countries have forms of government which may be considered democratic; that is, the people have ways of expressing their wishes, if they wish

Figure 286. Signs of change
© CNS Photos, Paul Guillumette, Inc.

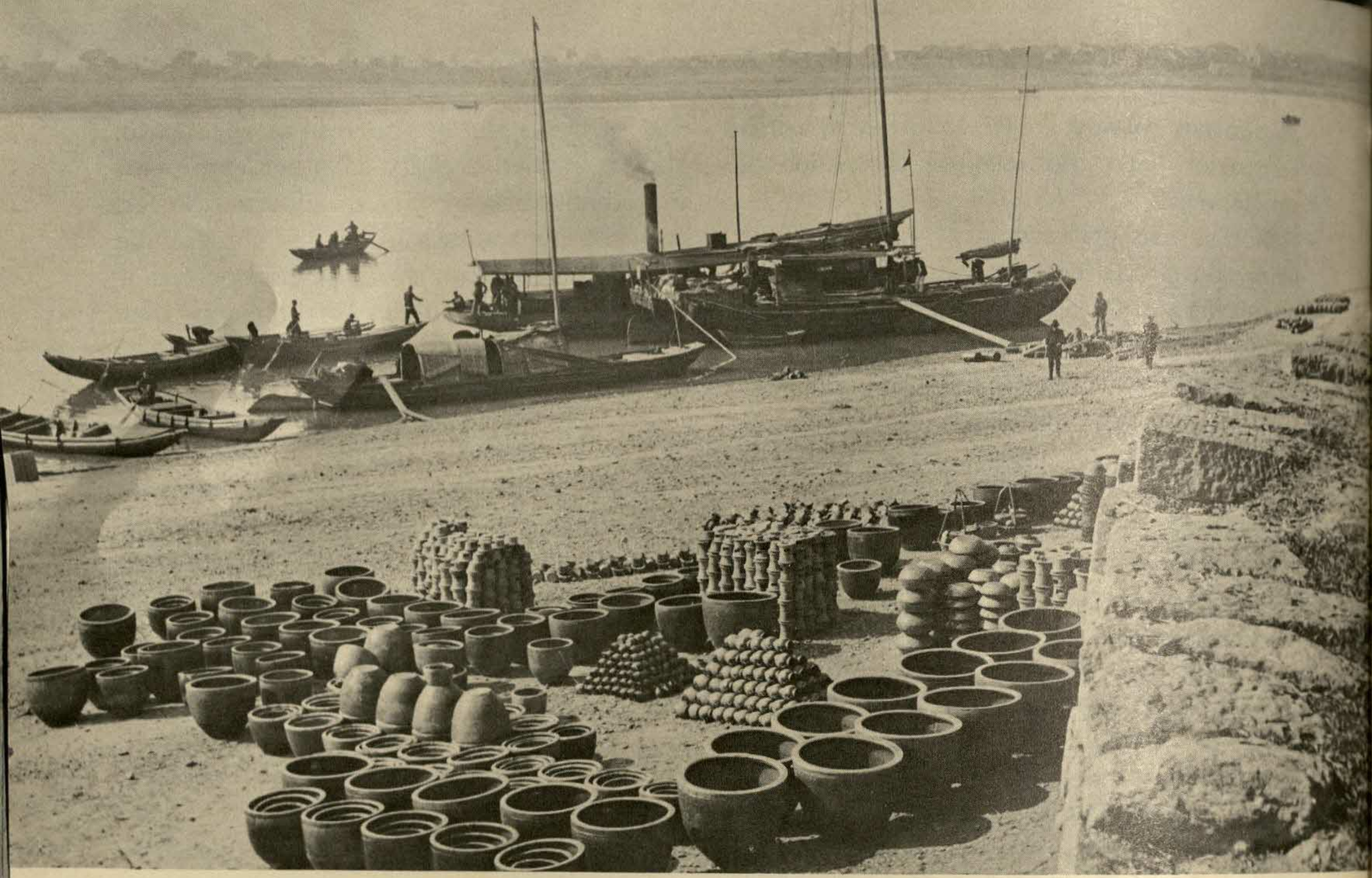


Figure 287. Using water transportation © *CNS Photos, Paul Guillumette, Inc.*

to do so. In actual practice, however, most of them do not participate much in the affairs of government. In some countries they scarcely know what their rights are. And where vast masses of people are illiterate, they can learn little of what goes on in government, what their leaders really believe in, and what actions should be taken by the government.

The people take a somewhat greater part in local affairs than in national affairs. They may elect a few officials for the community or district in which they live. But there, too, they are handicapped by illiteracy. They have to depend largely on hearsay for their opinion of the candidates.

Education. The map of literacy (pp. 392-393) shows that the vast majority of the people in southern and eastern Asia cannot read or write. There are several nations, however, which stand out from those around them because of their greater progress in education. One is Japan, which is in the same group as the United States and Europe. Another is the Republic of the Philippines, which belonged to the United States for more than 40 years. During that time education was strongly encouraged.

In nearly every country literacy is increasing. And increased knowledge has helped to improve methods of farming, for instance, and to raise standards of living in general. Perhaps progress in education will do as much as anything else to improve the patterns of government, also.

Health. As you have read, page 209, there are few medical workers in some parts of the world. This is particularly true in southern and eastern Asia. There, the people follow the superstitions of the past more than the scientific knowledge of the present. One result is that in some of these countries the lifetime of the average person is less than half that in the United States.

The picture on page 295 shows a big, open well, perhaps 20 feet across. This well in India supplies a city of thousands with water. Someone from each family in the city comes here, usually every day. A jar or bucket at the end of a rope is let down into the well, and pulled up again when filled with water. But an open well like this cannot be kept clean. As a result, the water is not pure, and the health of the people is endangered.

Except for those who live in a few big cities in southern and eastern Asia, the vast majority of the people depend on such open wells, or ponds or streams, for their water supply. The people of most communities do not have either the necessary skills, machines, or money to build a modern water supply system such as is taken for granted in western Europe and in the United States. The task of improving health, therefore, calls for skilled engineers, as well as for doctors and medicine.

Other special services. Every community in southern and eastern Asia has its religious leaders. Except in the very smallest town there is an inn where travelers can stay. Entertainers go from community to community, singing, dancing, or putting on little plays, all for a few coins. A show such as this may be given in the shade of a tall tree in summer, or on the sunny side of a wall in winter. In the larger cities, of course, there are modern theaters, such as you saw in Japan (p. 215).

Workers in communication are few, for communications are not well developed. Telephones are scarce, as you have noted (p. 213). There are radio stations in every country, but few of the people own radio sets. In many towns you may find only one radio. It may be in the public square, going full blast all day long. Lack of good communications, like illiteracy, helps to explain why, in many countries, the government is in the hands of a few people.

Helps in Learning

1. The picture on page 287 suggests the meeting of East and West. What things in this picture suggest Oriental ways of life? What things suggest Western ways?

2. The chief four farming regions of the world stand out boldly on the map on pages 72-73. One of them is in our country. Which two are in southern and eastern Asia?

3. Read again the stories about farming in the India-Pakistan peninsula (pp. 110-112) with this question in mind: Why are most farmers very poor in spite of the great natural resources?

4. Which pictures on pages 288 and 289 illustrate the general character of manufacturing in most of Asia today? How would you describe this type of manufacturing?

5. What reasons help to explain why modern manufacturing has developed so slowly throughout most of southern and eastern Asia?

Which country is by far the most industrialized nation there today?

6. What are the six essentials of manufacturing, anywhere in the world? (Pp. 166-167)

Figure 288. Live freight

© CNS Photos. Paul Guillumette, Inc.

Which three do southern and eastern Asia have? Which three are lacking, in general?

7. Look again at the pictures of a department store in Japan and a peddler in Thailand (pp. 182-183). In southern and eastern Asia as a whole, which of these is very common, and which is uncommon?

8. How does the water from the well shown in the picture on page 295 reach the homes of the people where it is used? Does this well supply many, or few, people? Why is it not surprising that this water is not pure?

9. What is the source of water supply where you live? How is the water moved from the source of supply to people's homes? What care is taken to keep the water pure?

10. Find India on the map of ocean trade routes (p. 378). You can see from this map that much trade flows in and out of India through two great ports.

Consult the map of Eurasia (pp. 386-387) to find the names of these ports.

A Pattern of Community Life

We have seen something of many kinds of work that men do in southern and eastern Asia, not only in farming but manufacturing, trade, transportation, and special services. How do these kinds of work "fit together" in a particular community? The story of one small district in China will illustrate how they fit together in many parts of southern and eastern Asia.

A county in northern China. Chowping is the name of a small district that may be called a county, in northern China. It lies a short distance to the south of Tientsin (pp. 386-387).

Most of Chowping County is farm land, rich and almost level. The farmers grow various grains, cotton, beans, and other crops. Their tools and methods of work resemble closely those of Pachperwa and Luts'un (pp. 112, 114-115). In their spare time, many farm people spin thread and weave cloth. Others make baskets, mats, shoes, and simple harnesses for the oxen that pull the plows. Some of these things are made to sell.

The farmers live in villages, scattered through the county. Here and there among them are the market towns. Each market town is a small, urban center of trade and special services for the territory roundabout. In a very real sense, the market town is the bridge between the rural, isolated, agricultural people and the outside world.

Market day. Every fifth day is market day. Soon after dawn, on that day, men and women arrive from all directions. Some carry big bundles on their backs. Others have pack animals, wheelbarrows, or carts. Some of the men are merchants; some are craftsmen who own little workshops. Some are farmers with surplus food, or perhaps homemade cloth, to sell. Soon the goods are displayed on temporary stands or are spread carefully on the ground.

The customers, also, come from all directions, walking along the dirt roads that lead to the market town from the surrounding villages. By noon there are hundreds or even thousands of them in the town. By evening all have left, and the town returns to four days of quiet.

Chiefly trade. The chief activity of the market town and of market day is trade, of course. In one rather large town there are 74 stores which are open daily. But on market day there are 791 sellers in the town, most of them in the open-air market place. This represents a great increase in trade, but not necessarily in the number of people who make a living mainly from trade. Many of these sellers are producers who take a day off from their work to sell what they have made.

Much of the trade is surprisingly local. In one survey it was found that more than half of all the goods offered for sale were produced within a distance of 18 miles. This is very different from what you would find in almost any community in the United States.

The market in the town is the *only* outlet

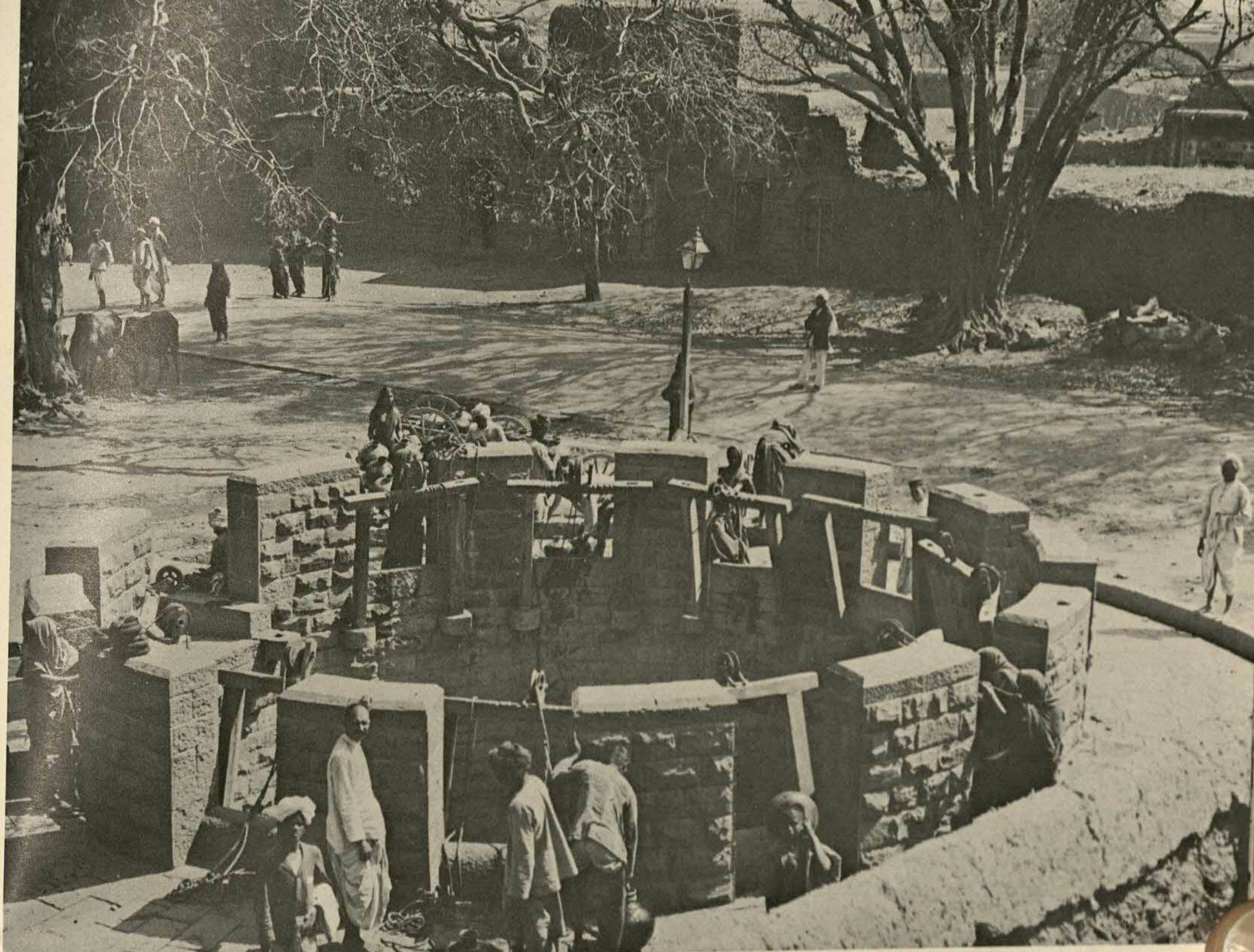


Figure 289. Water supply for a city

© Ewing Galloway

for most of the home industry as well as for surplus farm products. And it is almost the only place where farm people can buy goods from the outside world. It is much like this throughout southern and eastern Asia. The market town furnishes the essential link between a group of rural people and all the other people in the world.

Other activities. The market town is also a center of transportation, communication, and special services, which all adds to the importance of this bridge between peoples. A railroad reaches several of the market towns. Dirt trails lead out from the same towns to connect all the settlements in Chowping County. These trails are not wide enough for automobiles. Most of them are only about six feet wide, except for an occasional "turnout" where the trail has been widened to 8 or 10 feet, permitting carts to pass at that one point.

Chowping County has few of what may be called modern means of communication. A few years ago the county government installed some local telephone lines connecting the county seat with seven government offices in other parts of the county. This telephone system is for the use of government officials only, although, in an emergency, ordinary citizens might be permitted to use it.

The postal system reaches the rural people of the county mainly through the organization of market day. A box is placed in the market town from which out-going mail is collected. Also, a postman visits the town on market day, and looks until he finds the person for whom he may have a letter. If that person cannot be found, the letter is given to someone else from the same village, who carries it back with him. Actually few letters are sent or received, for most of the people cannot read or write. When an illiterate person wishes to send a letter, he goes to the fortune teller in the market, who will write it for him, for a small charge.

Also in the town on market day are singers, magicians, barbers, professional storytellers, and so-called doctors, who really are only medicine salesmen. Most of these medicines are of uncertain value, but the average buyer has no way of knowing what is good and what is not.

Calcutta, a Great City of the Orient

A city in India. The picture on page 297 is a scene in Calcutta, a famous city in India (pp. 386-387). People are waiting for the bus to start. The routes the bus will follow are marked on signs above the windshield, just as buses in American cities have signs or numbers that tell where they are going.

As Chowping County illustrates urban life in market towns, so Calcutta is representative of many of the large cities of southern and eastern Asia. Understanding how people live in Chowping and Calcutta will help us to understand the people of China and of the India-Pakistan peninsula. This is important, since in population these are the two giants of the earth. The great majority of the people of southern and eastern Asia live in these two areas. In fact, nearly half the population of the world may be found in China and the India-Pakistan peninsula.

The check list for studying cities (pp. 162-163) will be useful in learning about Calcutta.

Natural setting. Calcutta is the chief city within the wide-spreading delta of the Ganges. This river flows eastward across northern India into the Bay of Bengal (pp. 386-387). It is a tropical city. July is always hot. January is always warm (pp. 374-377). The monsoon winds sweep in and out over Calcutta just as over the farm lands in the peninsula (pp. 110-111), bringing a deluge of rain at one season, and dry, dusty air at another season. From Calcutta a wide, almost level plain reaches north and then west, upstream along the Ganges River (pp. 380-381, 386-387). Most of India's coal and iron ore are found a short distance west of Calcutta.

Size. More than two million people live in Calcutta, making it the third largest city in the Commonwealth of Nations. In all British lands, only London and Bombay are larger. In southern and eastern Asia, only Tokyo, Japan, and Shanghai, China, have more people than Calcutta.

History and people. Calcutta is a new city. A century ago, the land roundabout was little more than a swamp. But early British traders built a trading post at a place on the river bank which they found was above the level of floods. There the city grew, and as it spread, men reclaimed much of the water-soaked land that almost surrounded it.

Only a few thousand Europeans live in the city. Nearly all the others are Indians, of different racial backgrounds and castes. They are unlike in appearance; they belong to different religious groups; and they speak different languages. There are far more men than women in the city, for thousands upon thousands of men have come from elsewhere in India to work for short or long periods of time in the factories of Calcutta.

Streets and buildings. The sharp contrasts in ways of living that are common to all of Asia may be seen in Calcutta. In the downtown district there are fine office buildings, paved streets, and modern hotels. Many lovely homes may be seen along tree-lined boulevards. The other extreme is a greatly overcrowded area along the river, where living conditions are as bad as anywhere in the world. Many of the main streets are parallel to the river bank.

Connections. Calcutta's connections have helped it to become great. Ocean ships sail

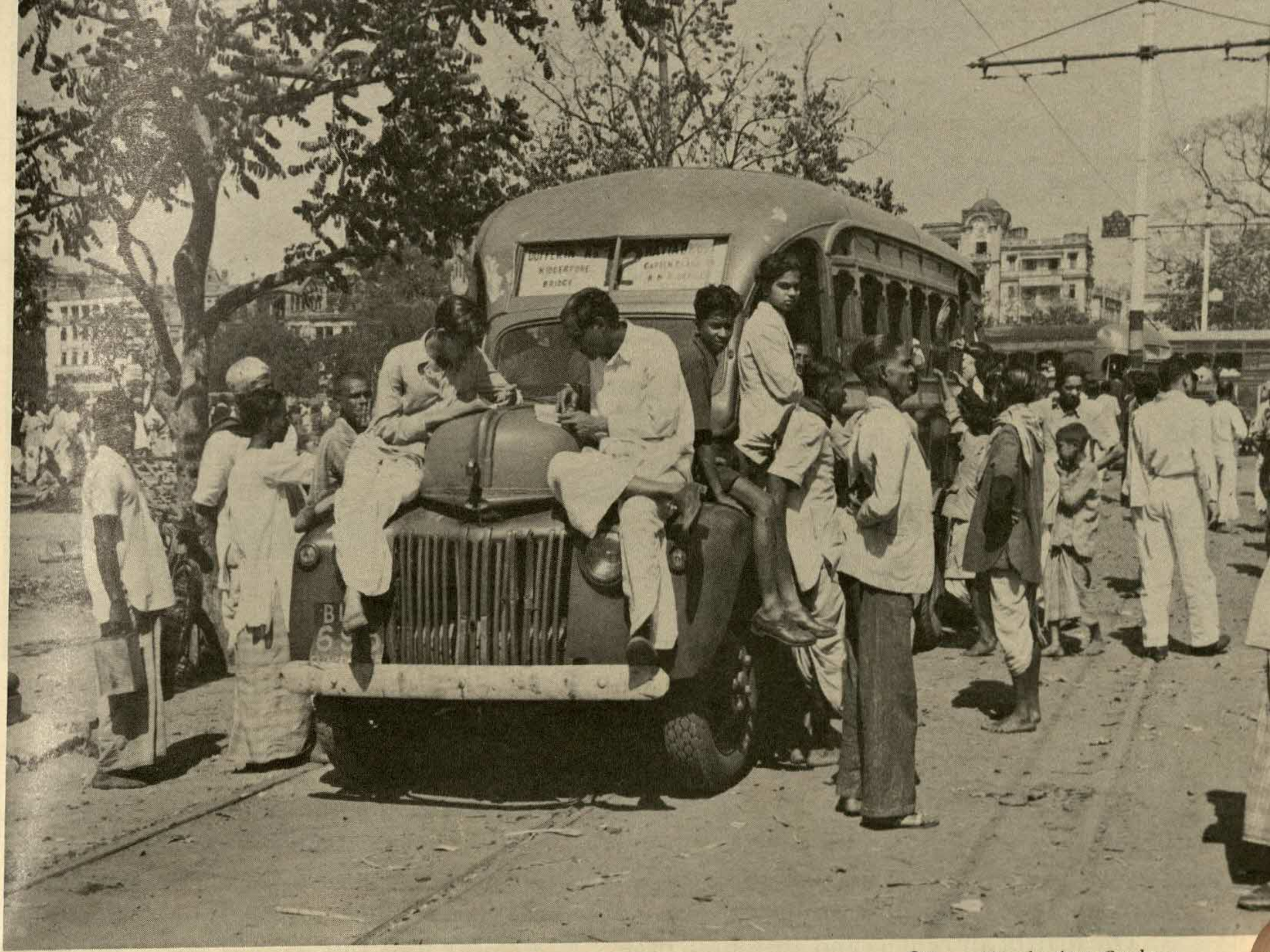


Figure 290. Waiting for the bus to start in Calcutta

© *Screen Traveler, from Gendreau*

up the river some 70 miles to the city. From there, river boats sail north and west over the inland waterways. Railroads, highways, and air routes all focus on the city.

These connections lead to the outside world and to the fertile, thickly settled Ganges Valley (pp. 370-371). In the normal trading territory of Calcutta there are 200 million people, far more than all the people in the United States.

Work. As you would expect, Calcutta has many workers in trade, transportation, and in the special services common to the Orient. Furthermore, it has become India's leading center of manufacturing. Raw materials are abundant, including jute, iron ore, and cotton. Labor is more than plentiful. Coal for fuel is not far away, and an enormous market is almost next door, as you have seen. Large amounts of capital are available. Transportation connections are excellent. Calcutta has more advantages than most places in the Orient, in the essentials of modern manufacturing (pp. 166-167).

Great cities within agricultural lands. This story of Calcutta calls attention to one of the surprising facts about southern and eastern Asia. The lands in general are agricultural with most people buying little and selling little. Yet in the midst of these lands rises a city like Calcutta. The explanation is, of course, that even a small amount of trade per person becomes a huge amount, when it is centered in a single city.

The Setting and the Problem

Flying over the land. If one were to take a trip by airplane over southern and eastern Asia, and knew what to look for, he could

Figure 291. Where some problems may be solved

© *Ewing Galloway*

learn much about it. He would understand the setting for some of the great problems that people face in the various nations. And he would appreciate what the people have been doing to solve these problems.

The map of air centers and air routes, page 379, shows the routes that a traveler might follow between Japan and southwestern Asia.

Above Japan. As the plane comes in over Japan from the sea, it must rise high, for there are mountains on every side. They seem to cover nearly all the land. But here and there one sees narrow valleys or small plains opening to the sea. In these lowlands, men are at work, cultivating their thousands of tiny fields. The farming areas are small, for only about one-sixth of the land can be cultivated. Some of the larger valleys and plains have great clusters of cities, partly hidden by the smoke from factory chimneys. Soon the plane has crossed Japan, and is over the sea again, for all together the Japanese islands are only about as large as Montana.

That is the setting, and already you can sense the problem. In this small and mountainous land live more than 80 million people. Their literacy is high, and there are many skilled farmers and factory workers. But where shall they get land enough to farm, or raw materials for the factories?

This is one of the basic problems faced by most of the peoples in southern and eastern Asia—many people, little land.

Across China. In normal times, the plane from Japan might land at Shanghai, one of the cities of China, and then go on to Hong Kong. Again you would see tiny fields, worked by men without the help of machines, and narrow paths that serve as roads connecting one village with another and with the market towns. Many times during the past 20 years, soldiers could have been seen marching along. This calls attention to a problem that China, in particular, has faced. Year after year, China has been troubled by riots and war, even when the rest of the world was at peace.

It takes much longer to fly across China, than across Japan. For China is large and has more than 450 million people.

Over peninsulas and islands. An interesting air route leads from Hong Kong to Bangkok, to Manila, and then to Saigon and Singapore (p. 379). There the sea and the forest dominate. It is a land of peninsulas and islands. Except in a few broad valleys, man seems to have only begun his struggle to clear the land. Settlements are few and widely spaced. If you went on to Java, of course, you would find another thickly-settled land, like China and Japan (pp. 370-371).

The India-Pakistan peninsula. A scene much like that in China appears again, when you fly over the broad peninsula of India, now divided into Pakistan and the Republic of India. The island of Ceylon is near-by (pp. 386-387). Every possible acre is farmed. In places the villages seem almost to touch, and the people appear in clusters and swarms rather than individually.

In dry southwestern Asia. Continuing westward to Basra, Baghdad, and Cairo (p. 379), a new and different landscape appears. It is dull, dusty tan, or gray, much like the landscape shown on page 109. This is Arab Asia, a part of the Arab world that reaches on westward across northern Africa to the Atlantic (pp. 380-381). It is a land of nomads and oasis farmers, chiefly Arabs.

Along great rivers, such as the Tigris, Euphrates, and the Nile, there are farm lands as crowded as any in India and Pakistan, China, or Japan. There are bustling cities such as Cairo, with more than a million people. In between lie long, monotonous stretches of barren ground. When the sun is high at noon, and people seek the shelter of their tents, the only moving things in the desert are a few camels, sheep, or goats.

One solution. One basic problem, then, is common to much of southern and eastern Asia. Most people must live from the land, and there is little land for each worker. This is just as true in dry, southwestern Asia, and northern Africa, as anywhere else. The delta of the Nile, for example, is as overpopulated as any part of Japan.

The picture on page 298 is a sign that some people are seeking a basic solution to the problem. This beautiful building is the Agricultural Institute, in the capital of India. There, men are studying how to improve the soil, the grasslands, the growing of crops, and the raising of livestock. They know that they cannot add any new land to the continent. *But if they can make their land produce more than it now does, that will help almost as much as finding millions of acres of new land.*

More production, then, is one of the essential keys to better days in southern and eastern Asia. As farmers produce more, they can sell more, and buy more, and save more. And the urban workers will have more raw materials, more employment, and a greater market. All the people will have a better life.

Helps in Learning

1. You have read that China and India-Pakistan are "the two giants of the earth." In the statistics (p. 397), find the populations of China, India, and Pakistan. What is their total population? How does it compare with the population of all North America (p. 396)? Of all Europe?

2. The tools and methods of work of the people of Chowping closely resemble those of Luts'un (pp. 114-115). Read again the story of Luts'un with this in mind: Has the Industrial Revolution had much, or little, effect on the tools and the methods of work of the people?

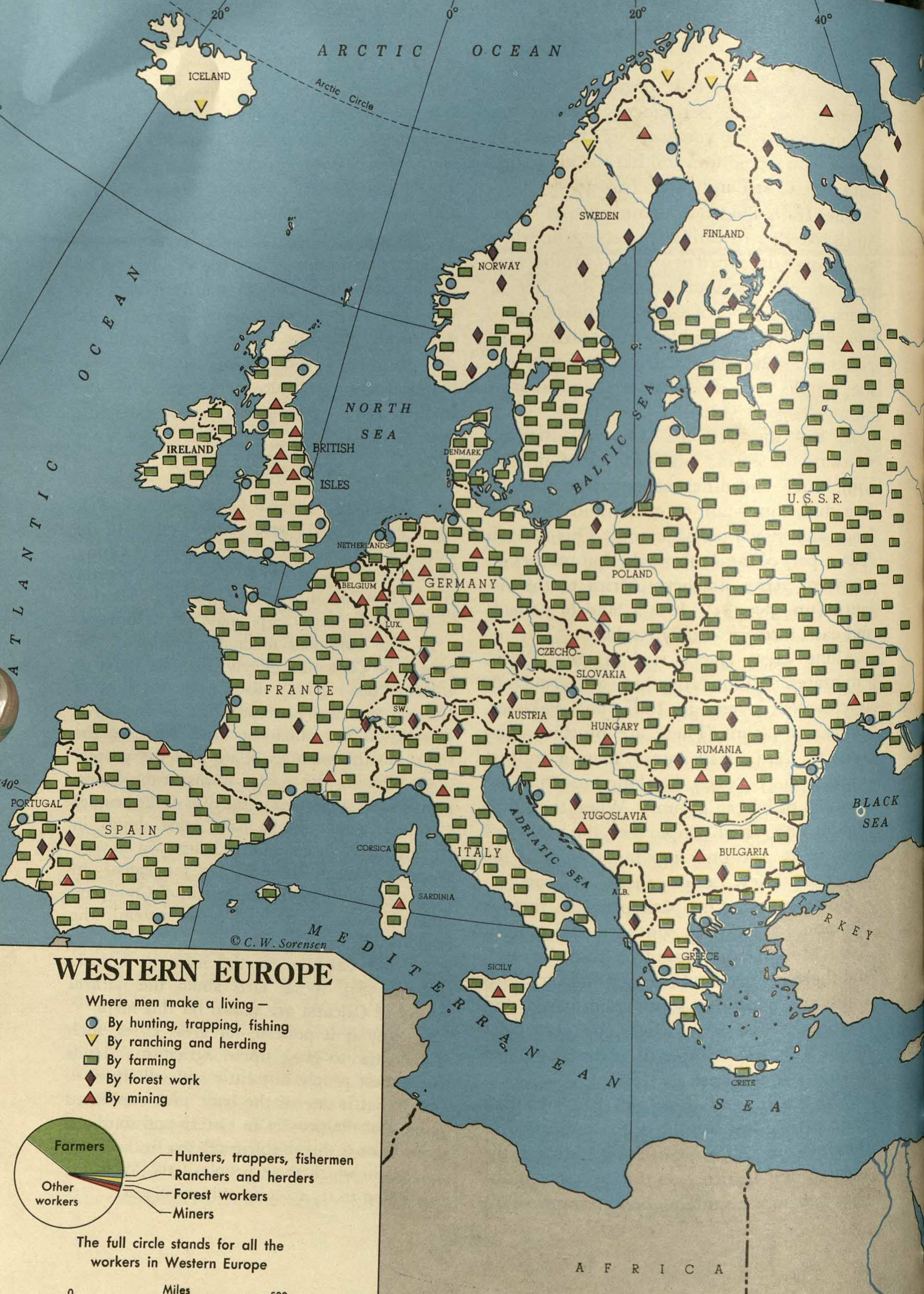
3. Why are the market towns in the Chowping district important in the lives of the people?

These market towns have some things in common with the community where you do your shopping. What likenesses can you name? In what ways is the telephone system of Chowping different from yours? the postal system? the road system?

4. Find Calcutta on the map of Eurasia (pp. 386-387). What facts about the *natural setting* of Calcutta are shown on this map?

5. Why is it possible for great cities, such as Calcutta, to grow up in agricultural lands where most people buy little and sell little?

6. What is one of the basic problems faced by most of the peoples in eastern and southern Asia? How is this problem related to the kinds of lands in which these peoples live? What are men doing to try to solve this problem?



WESTERN EUROPE

Where men make a living –

- ○ By hunting, trapping, fishing
- ▽ By ranching and herding
- ▭ By farming
- ◆ By forest work
- ▲ By mining

The full circle stands for all the workers in Western Europe

Western Europe

A small peninsula. The peninsula of Europe looks very small when compared with the continent of Eurasia (pp. 386-387). In fact the countries of western Europe, that is, the lands west of the Soviet Union, represent only a small fraction of the area of the giant continent. As you will see, however, these lands are far greater in importance than their size alone would indicate.

Western Europe is so small that the map on pages 280-281 can give only a general picture of how men use the natural resources in the various countries. The map on page 300 is more of a close-up view. On this larger map you can see clearly the differences within individual countries as well as contrasts between the countries.

Coast line and mountain. The map on page 394 shows part of the natural setting of western Europe. Probably no other land has such an irregular coast line. The peninsula of Europe includes many smaller peninsulas, in which there are still smaller peninsulas. Offshore islands are numerous.

This kind of coast line has been a substantial advantage to western Europe during much of its history. Along the irregular coast, there are many harbors. These harbors encourage shipping and trade. In earlier times, before men knew much about navigating the open sea, they could sail from island to island, or peninsula to peninsula, with some shelter from storm nearly always close at hand. The harbors have not lost their importance with the coming of modern ocean shipping. Ships still need quiet water in which to anchor.

The chief mountains of western Europe are named on the map on page 394. They are the Pyrenees, the Alps, the Apennines, the Carpathians, and the Kjölen mountains. Each range of mountains affects the kinds of work done in that area. Many of the forest workers in the central part of western Europe live and work in mountainous areas.

Weather makes a difference. The pattern of work shown on page 300 has a definite relation to the weather in western Europe. For example, no one can fail to understand the reason why there are no symbols for farming in most of Norway, Sweden, and Finland. The winters are too long and cold, the summers too short. You will recall the picture on page 282.

If you will turn back to the map of farming, pages 72-73, you will find that western Europe has important farming areas considerably farther north than any comparable farm lands in North America. There is an interesting reason for this. In both continents winter weather is more mild along the western coasts than in the interior, as you can see by the map of January temperatures, pages 374-375. This is caused, as you know, by warm ocean waters that bathe these shores. In North America, the mild weather reaches only a very narrow strip along the coast, because a high mountain wall extends north and south near the sea, keeping the warm air from moving inland. In western Europe, however, there is no such wall along the coast. The mild, moist winds from the sea sweep inland for hundreds of miles, making farming possible over a much wider area than is possible at the same distance from the equator in North America.

Without these warm ocean waters and westerly winds the pattern of farming in western Europe would be very different. The northern boundary of the good farm lands of western Europe would be hundreds of miles farther south. It would then do no good for the British farmer to plant grain and

← Figure 292

add fertilizer to the soil, as he is doing in the picture on the opposite page. Britain probably would be a cold and dreary waste land. The Netherlands might be the home chiefly of hunters, trappers, and fishermen. Much of what is now the best farm land of western Europe would not be used for farming.

The nations of western Europe. The map on page 395 shows clearly the boundaries of the nations of western Europe. At a glance you can see that the countries are unequal in size and uneven in shape.

Americans sometimes forget how small the nations of western Europe really are. The largest is France, followed by Spain and Sweden. But no one of these is as large as Texas, as you can learn from the graphs and statistics, pages 396-400. Poland is not as big as New Mexico. California is more than 13 times as large as Belgium.

A few of the national boundaries follow natural features. The boundary line between Spain and France follows the Pyrenees. Rumania is set off from her neighbors by a line which in places follows a river. For the most part, however, the present boundaries are an inheritance from the tangled and troubled affairs of the past. Western Europe, a land of many nations, has also been a land of many wars. Time after time the map of Europe has been redrawn to suit some conquering nation or nations. So it was at the end of World War II, for example, when Russia moved westward into what had been eastern Poland, and Poland was extended westward into what had been eastern Germany.

Some of western Europe's most difficult problems grow out of the fact that there are so many separate nations within so small an area. The full prosperity of any region depends much on freedom of trade, travel, and communication. But these freedoms do not exist in western Europe as a whole. At nearly every boundary line, taxes must be paid; travel permits must be shown. Many people believe that western Europe would be much better off today if it had inherited fewer national boundaries.

As we read about the life and work of the various countries of western Europe, we shall see that there, as elsewhere, cooperation is needed not only within a nation but between nations. The long record of suspicion, fear, and war among the peoples of this region makes it hard for them to achieve the kind of cooperation which is so greatly needed. We shall see, however, the ways in which they are working on this problem.

Helps in Learning

1. Using the map on page 394, describe Europe's coastline. Why has this kind of coastline been a great advantage to the people of Europe during much of their history?

2. Are winters milder in the interior of Europe and of North America, or along the western coasts of those continents? Explain why.

3. In North America, the mild winds from the Pacific reach only a very narrow strip along the western coast. But in Europe, the mild winds from the Atlantic can sweep hundreds of miles inland. What explains this difference?

4. Why are the warm ocean waters and mild westerly winds important in the lives of the people of western Europe?

5. Find the area of your state in the statistics on page 400. How does your state compare in size with the following European countries (p. 397): Belgium, Britain, France, Italy, Spain, Sweden, Switzerland?

Now compare the population of your state with the population of each of these countries (pp. 400 and 397). In which of these countries are there more people than in your state?

Are there any countries in western Europe which have a smaller population than your state? If so, which ones?

6. Using the scale of miles on the map on pages 230-231, measure the distance across your state at its widest point. About how long would it take a passenger plane, flying 300 miles per hour, to fly across your state? Compare this with the time it takes to fly across Switzerland, or the Netherlands.

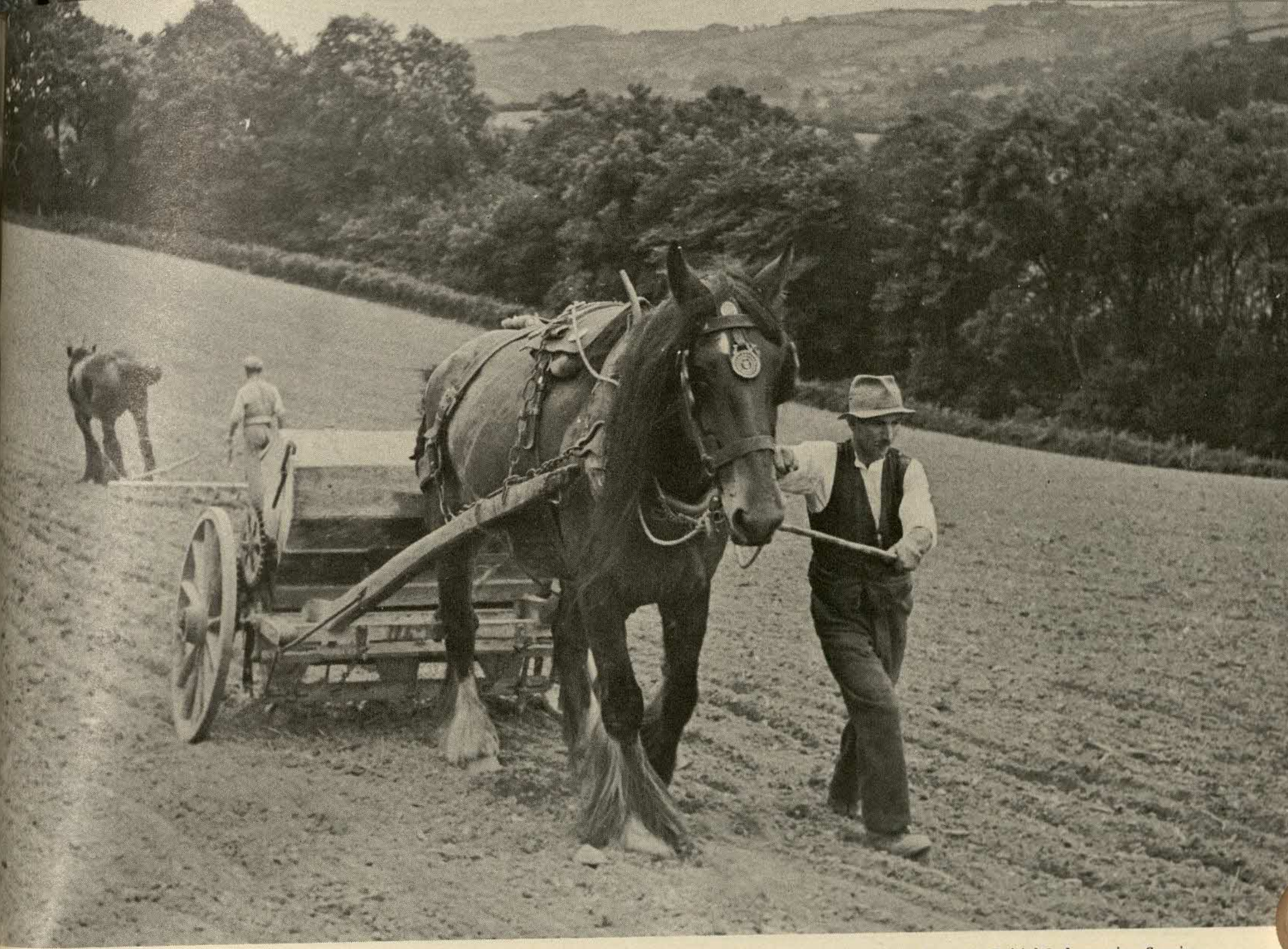


Figure 293. Good weather makes this possible

Courtesy British Information Services

How People in Western Europe Make a Living

Working with natural resources. The map on page 300 recalls many stories that you have read, and maps and pictures that you have seen, earlier in this book. You will remember, for example, the picture of a fisherman mending his nets in a coastal village (p. 37). There were nine pictures in one group showing farmers at work (pp. 99-105). On page 127 you saw a map showing the forests of Europe, together with other forest lands in the world. European miners are shown on page 148. There was no picture showing ranching and herding, for this type of work is rare in western Europe (p. 300). Most livestock is raised on farms, not on ranches.

Taken together, these five groups of people who work directly with natural resources represent slightly less than half of the workers in western Europe. This is shown by the graph on the map on page 300. Clearly western Europe is far more of an industrial area than is Eurasia as a whole (pp. 280-281). Yet it has a larger per cent of workers in agriculture than North America has (p. 226).

The other workers. The pictures on pages 304 and 305 call attention to the "other workers" in western Europe. They number more than half of the total. Their work goes on side by side with the work of the five groups just named. Figure 294 suggests those who work along western Europe's "main streets." This particular business street is in England. There are signs which show trade, transportation, and special services, particularly entertainment. In most ways, the business district of a town in western Europe resembles "main street" in our country. Each of the larger

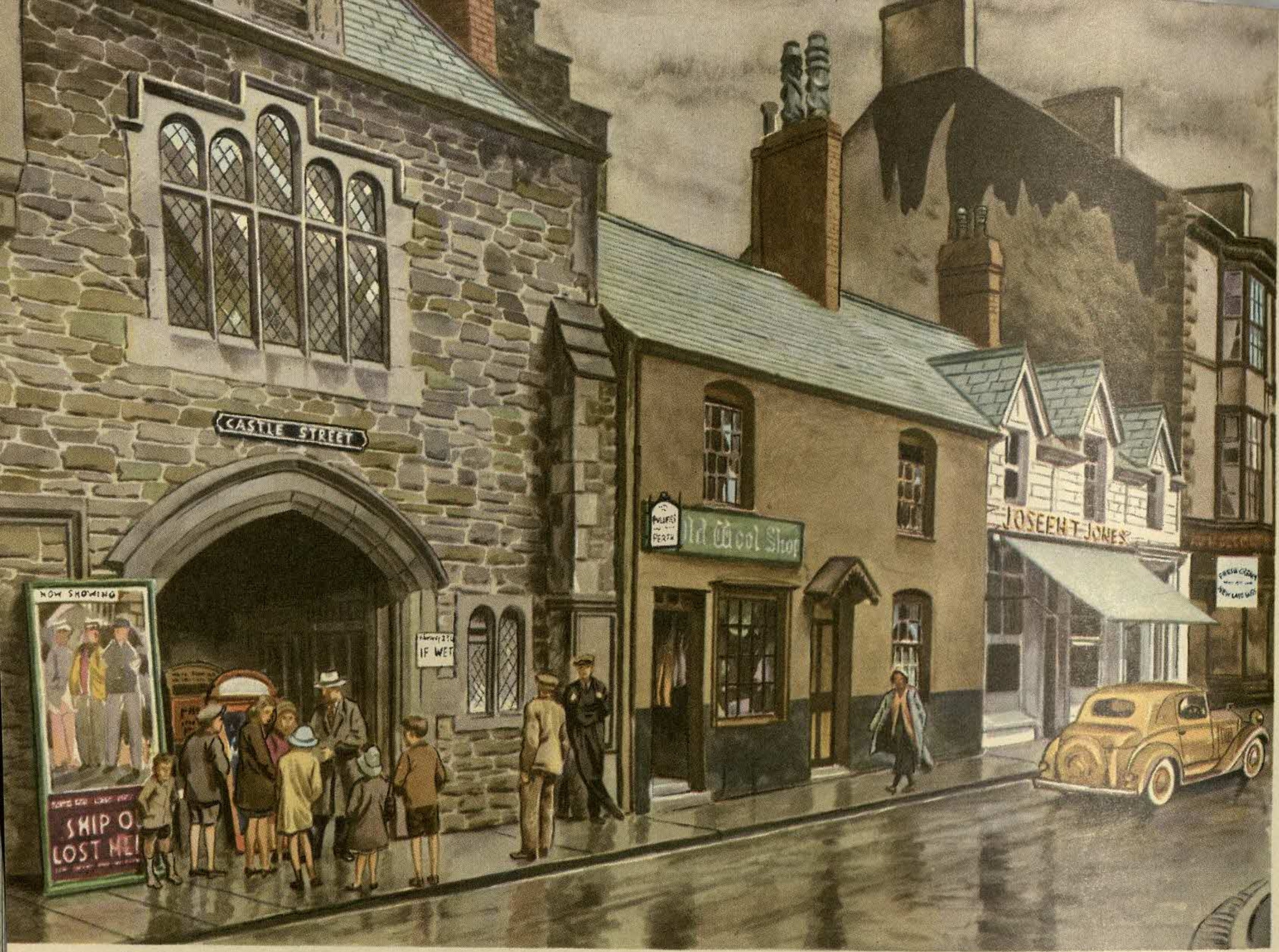


Figure 294. A business street in Britain *From photo by Ewing Galloway*

towns has a motion picture theater. The Saturday movie is as popular in many parts of western Europe as it is in the United States.

The picture on page 305 shows one of the enormous power plants which supply London with electric light and power. Boats bring coal by the thousands of tons, over the water highway. Some men guide the machinery that unloads the coal. Other men maintain the engines in the plant, watch the controls, and in general make sure that the flow of electricity is never interrupted.

These people are only examples of the hundreds of different types of workers who keep the wheels of civilization turning in western Europe, as in America.

What the maps show. The maps on pages 306 and 307 reveal some other important facts about the nations of western Europe. One map, page 306, shows what part of the workers in each nation are engaged in agriculture. The other map, page 307, shows what part of the workers are engaged in manufacturing.

You will notice at once that these maps are similar to those you used in your study of *How the States Differ* (p. 238). This makes it easy for you to compare your own state with individual countries in Europe.

Agriculture—compared with the United States. In the United States, you will remember, about 12 out of every 100 workers are engaged in agriculture (p. 234). But in western Europe, every country except Britain, has more of its workers engaged in agriculture than does the United States. This adds great emphasis to what is shown by the graphs on the maps on pages 226 and 300. Western Europe as a whole is much more agricultural than is the continent of North America.

There are interesting comparisons also between nations in Europe and individual states in our country. For these you will want to refer to the map on page 306, the map at the top of page 238, and the statistics on page 241.

Mississippi, North Dakota, and South Dakota are the only states in our nation where more than 40 per cent of the workers are engaged in agriculture. In western Europe, however, there are 12 countries where more than half of the workers get a living from some type of farming. The per cent of farm workers in countries such as Yugoslavia and Bulgaria is more than 70, far higher than in any state in the United States.

Workers in manufacturing. About 26 out of every 100 workers in the United States are engaged in manufacturing (p. 234). Remembering this, turn to the map on page 307, which shows what part of the workers in each nation in western Europe do similar work. You can count seven different countries where more than 30 per cent of the workers are in this group. In spite of the relative importance of manufacturing in these nations, western Europe as a whole is less of an industrial area than the United States (graphs, pp. 234, 300).

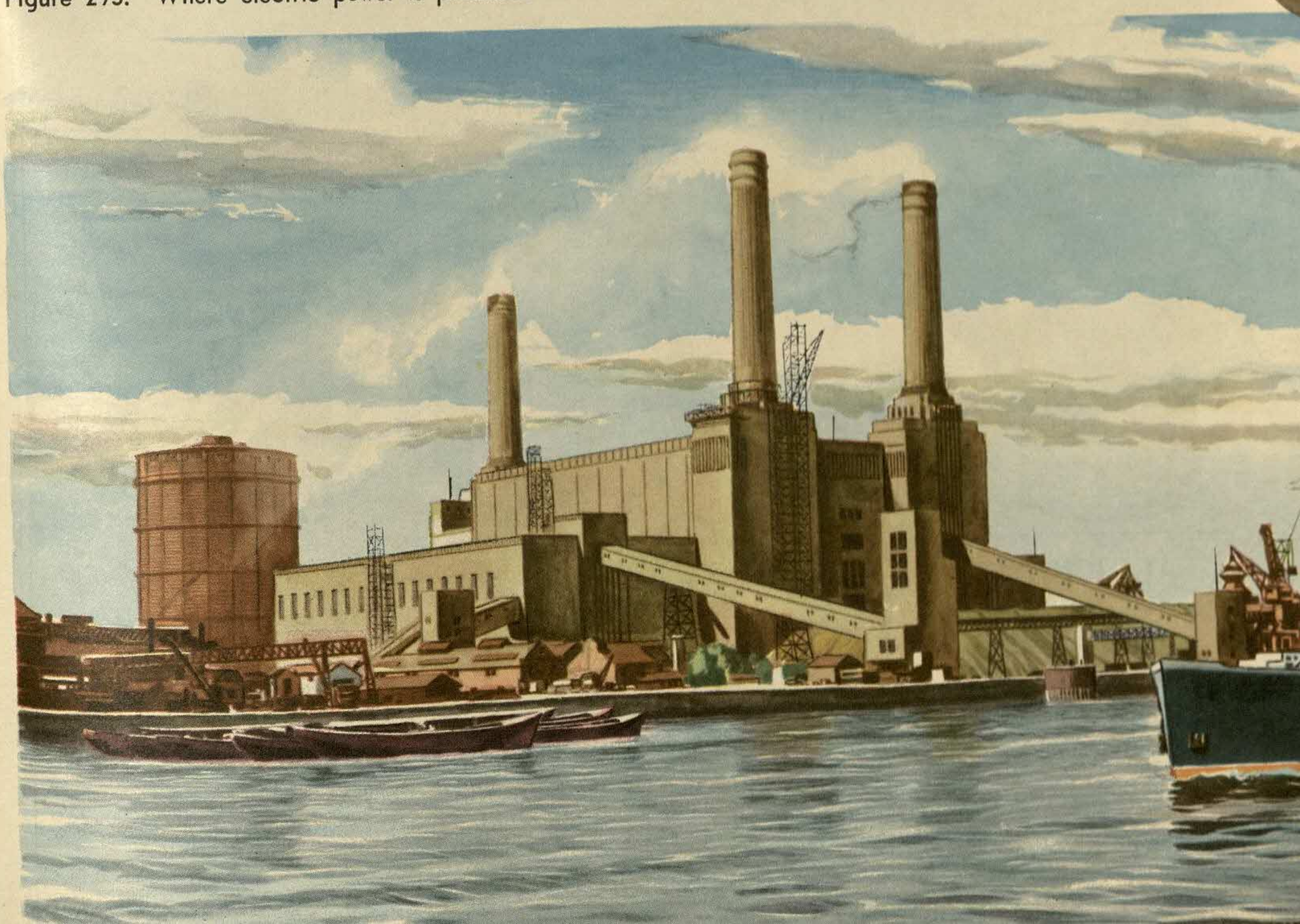
How Western Europe Leads

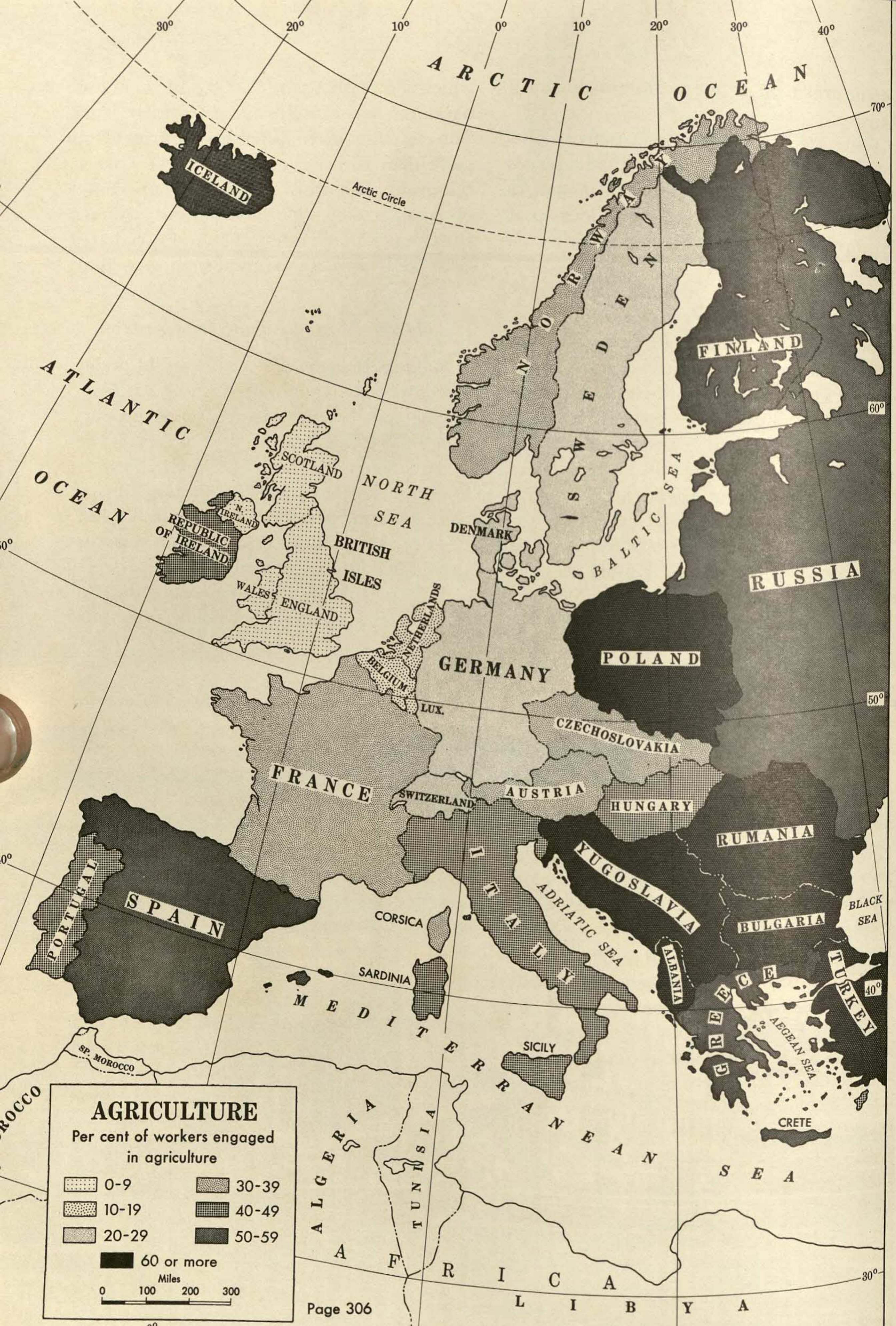
Making comparisons. The world today has only a few regions which stand out from all the rest, because of exceptional production, power, or influence. One of these is the United States. Another is western Europe. For centuries, the countries of western Europe were the world's leaders. Now this leadership must be shared. But western Europe remains prominent in the affairs of the world.

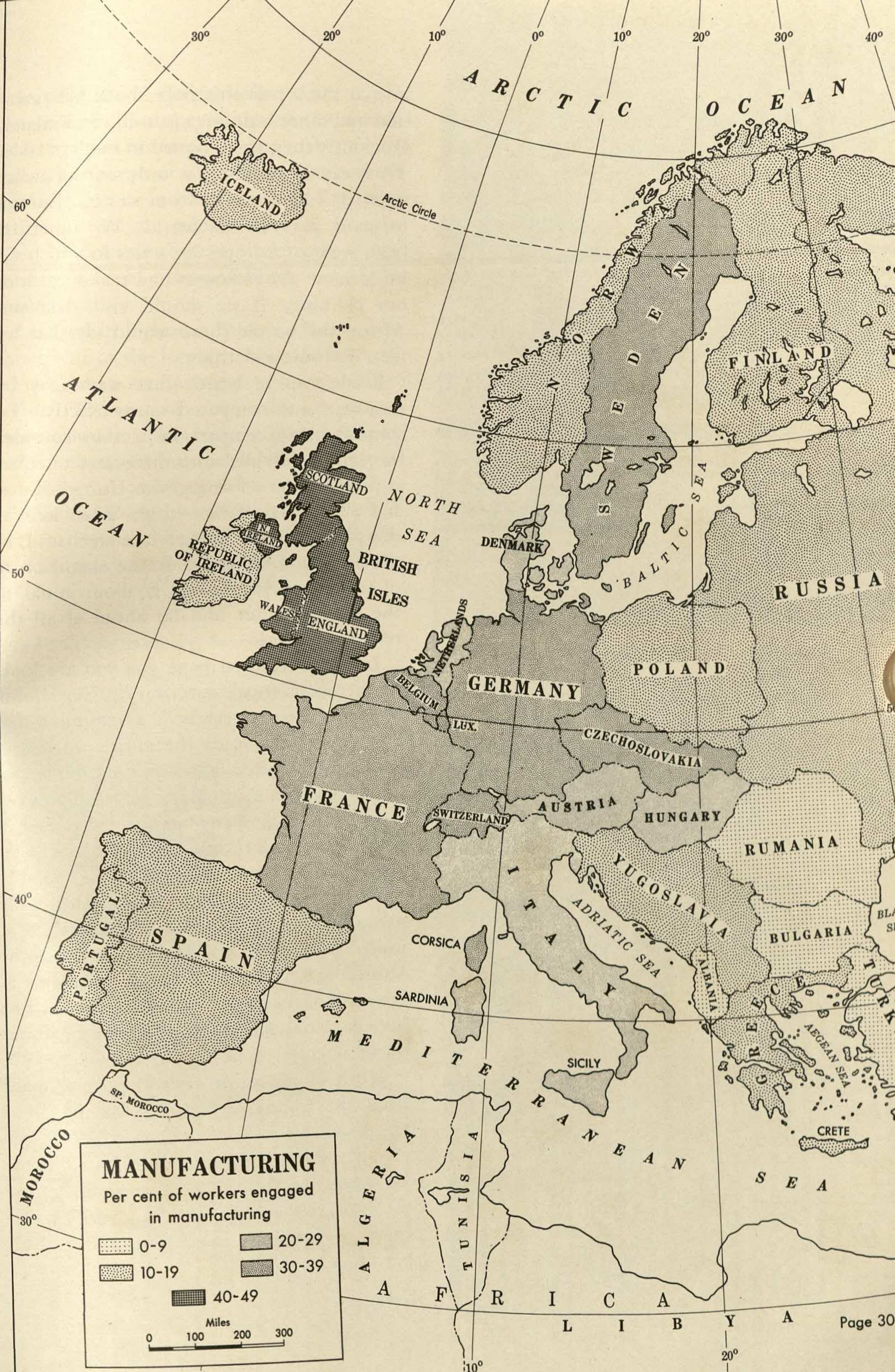
It is not always easy to measure the extent of this leadership. For example, the pic-

Figure 295. Where electric power is produced

From photo by British Information Services




AGRICULTURE
Per cent of workers engaged in agriculture
0-9
10-19
20-29
30-39
40-49
50-59
60 or more
Miles
0
100
200
300
30°
20°
10°
0°
10°
20°
30°
40°
70°
60°
50°
40°
30°
ARCTIC OCEAN
Arctic Circle
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
ADRIATIC SEA
BLACK SEA
AEGEAN SEA
MEDITERRANEAN SEA
ICELAND
NORWAY
SWEDEN
FINLAND
RUSSIA
SCOTLAND
N. IRELAND
REPUBLIC OF IRELAND
BRITISH ISLES
WALES
ENGLAND
DENMARK
NETHERLANDS
BELGIUM
LUX.
GERMANY
POLAND
CZECHOSLOVAKIA
FRANCE
SWITZERLAND
AUSTRIA
HUNGARY
RUMANIA
YUGOSLAVIA
BULGARIA
ALBANIA
GREECE
TURKEY
ITALY
PORTUGAL
SPAIN
CORSICA
SARDINIA
SICILY
CRETE
SP. MOROCCO
MOROCCO
ALGERIA
TUNISIA
AFRICA
LIBYA



MANUFACTURING

Per cent of workers engaged in manufacturing

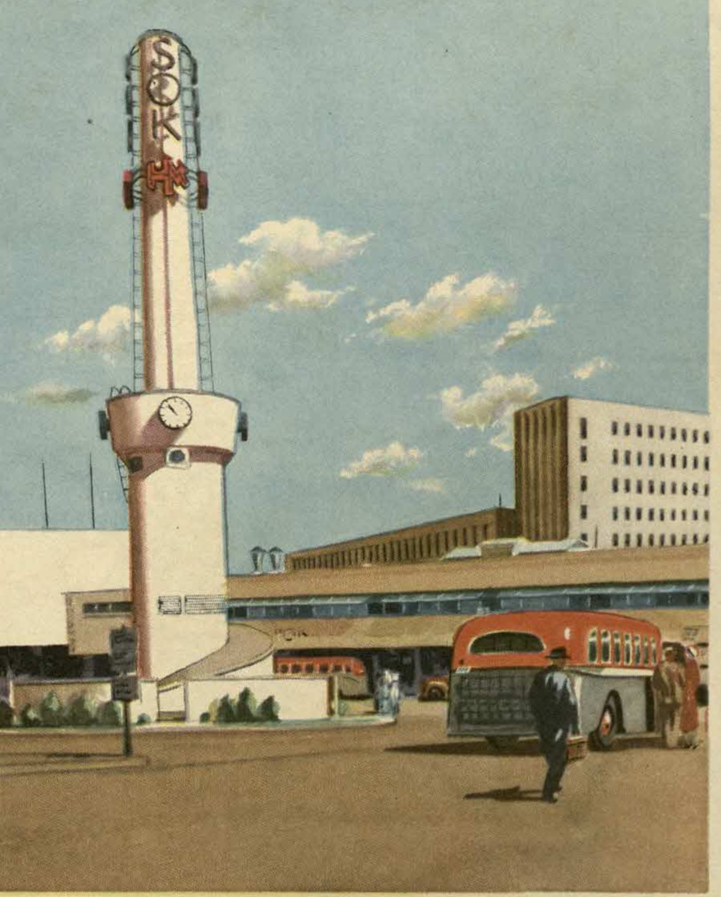
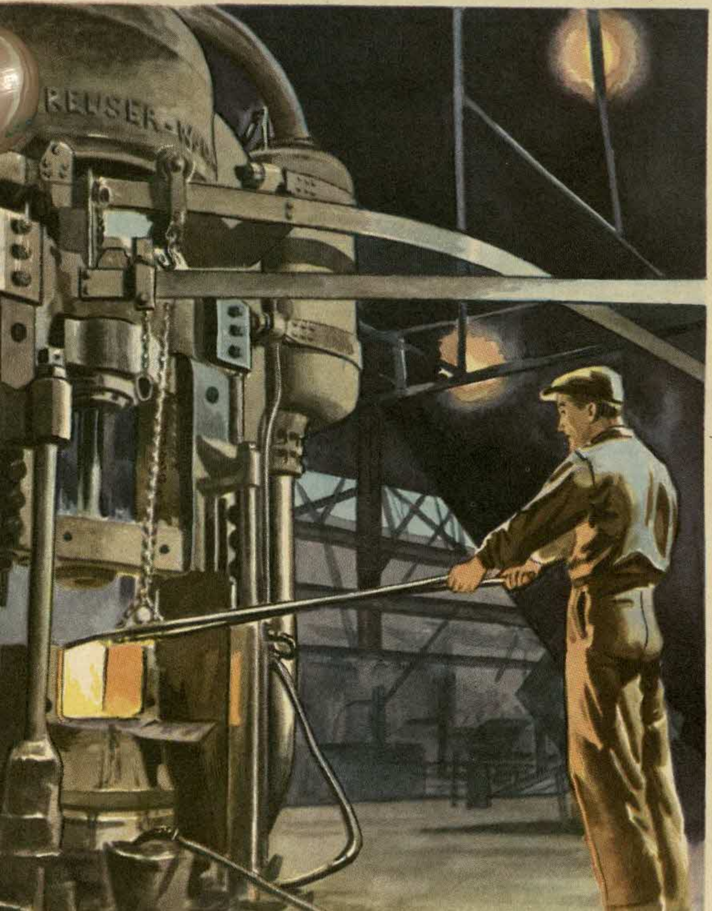


Figure 298. In modern style *From photo by Sawders*

Figure 299. Where steel is made and shaped *From photo by Monkmeyer*



ture at the top of this page shows a bus station and other buildings in a city in Finland. Obviously they are designed in modern style. This way of building is only one of many styles that have spread from western Europe to many parts of the world. We inherited from western Europe the styles in which we build most of our houses and make much of our clothing. If we should visit Asia and Africa, the people there would say that we wear European clothing.

Leadership in some other ways may be measured and compared more exactly. To simplify these comparisons, let us consider the earth as divided into three very unequal regions—western Europe, the United States, and all the rest of the world. Then look at the picture of the worker in a steel mill, at the bottom of this page. In the manufacture of steel, western Europe is about equal to the United States, and far ahead of all the rest of the world.

In the picture on page 309 you are looking across a broad waterway in Stockholm, Sweden. This waterway is a reminder that western Europe leads the entire world, including the United States, in the commercial use of rivers and canals as water highways. Stockholm, like many another city, is not only an ocean port, but a port for boats that sail the inland waterways.

In products from farm, forest, and mine. Western Europe produces almost twice as much wheat, and twice as much barley as the United States. Its potato crop represents at least half of the crop of the entire world. The horses, cattle, and sheep on European farms outnumber all those in our country.

Much of the world's wood pulp is made from the forests of western Europe. The miners of this region dig more coal and iron ore than do the miners of the United States. Western Europe produces more than one-third of the world's coal, and about one-third of the iron ore. It produces little petroleum.

In products of the factories. As you have seen, western Europe is one of the world's leaders in making steel. It also makes nearly half of the rayon of the world. Many of the world's ships are constructed in European shipyards. In the manufacture of automobiles, however, and most other types of machinery, western Europe falls far behind the United States.

Leadership in trade. Western Europe has about half of the foreign trade of the earth, far more than the United States or any other region. The map of ocean routes, page 378, shows how the chief ocean highways lead to and from western Europe. It is without question the great center of world trade.

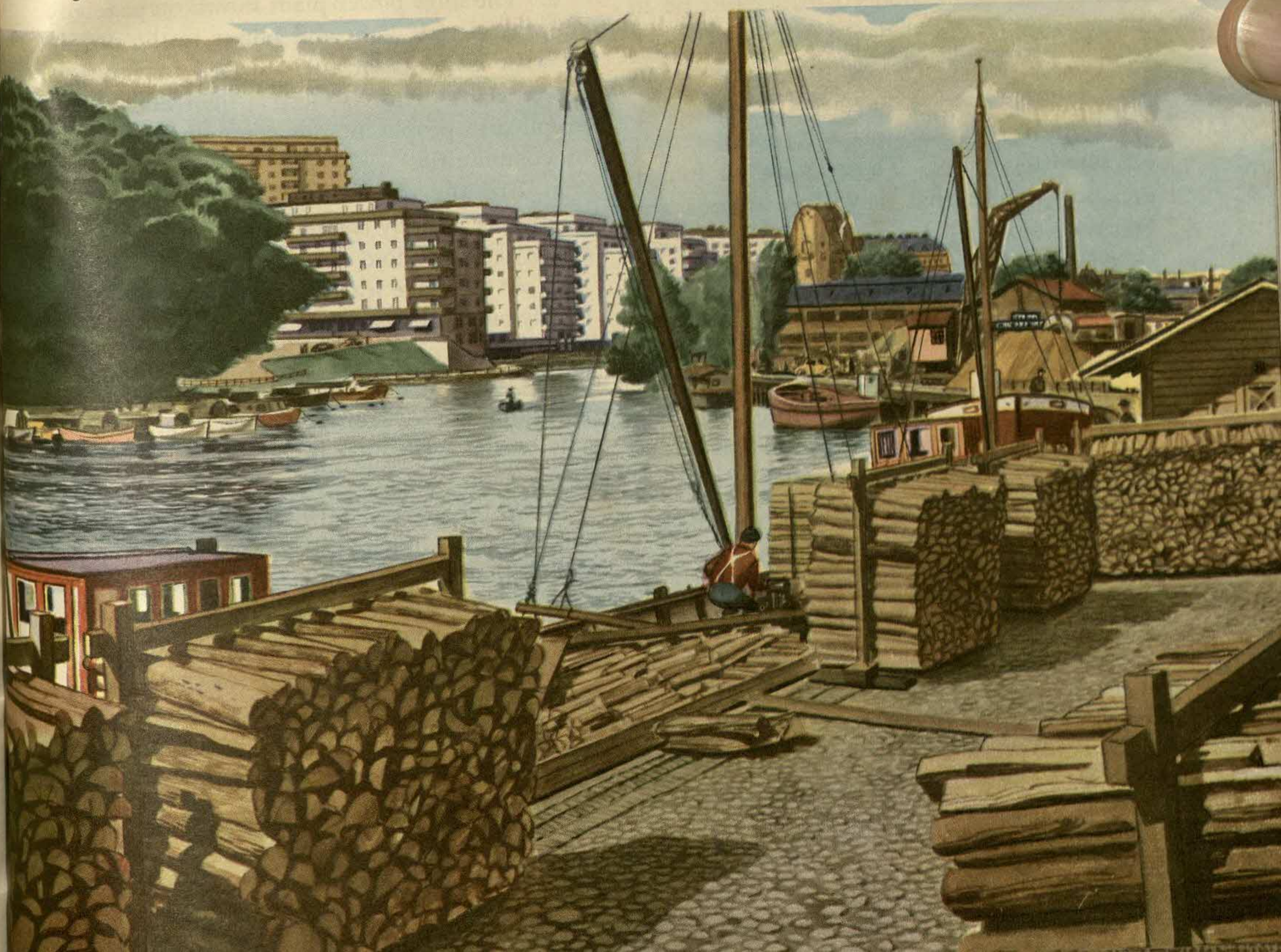
This leadership in trade is reflected in the fact that western Europe has many of the world's great ports. In normal times the port of Antwerp, Belgium, shown on page 311, is one of the most important. Hundreds of steamers and thousands of smaller harbor craft crowd the water front. Warehouses, such as the one which you see on the extreme right, are beehives of activity, with men constantly moving, sorting, and checking the piles of merchandise.

In power and influence. Western Europe is a world leader politically. Except for the United States and the Soviet Union, it has the world's strongest armies and largest navies. And it has definite political ties with lands in every continent.

Years ago, colonial empires were built up by Spain, Portugal, Britain, France, Belgium, the Netherlands, Denmark, Germany, and Italy. Germany lost all her colonies after World War I. Italy lost colonial territory

Figure 300. In Stockholm, Sweden

From photo by Ewing Galloway



after her defeat in World War II. Some European colonies have become self-governing units which maintain a connection with the homeland. Some colonial possessions have broken away entirely.

In spite of these changes, the nations of western Europe still have some political ties with, or control over, the lands where about one-third of the people on earth live. Naturally, western Europe is enormously strengthened by the people and resources of its outlying territories.

Western Europe, then, looms big in any world view. Prosperity or poverty in the world, war or peace, progress or decline, all these are influenced greatly by what happens in western Europe.

How it came about. This leadership of western Europe did not come suddenly or accidentally. It is a gradual growth of two thousand years, since the days of the Greeks and the Romans.

The roots of its modern leadership lie in the advance of knowledge, in the progress of science, and in the possession of certain natural resources. Early in modern times western Europe was the world's foremost center for scientific study. There, men no longer took for granted that they already knew the best ways of doing things. One invention followed another, as men experimented, observed, and learned. This led to the Industrial Revolution, which at once gave western Europe world leadership in manufacturing, and in the use of machinery generally.

The Industrial Revolution, in turn, depended on iron ore and coal for making the machines and running them. In these resources, western Europe was rich.

The Industrial Revolution helped western Europe build the colonial empires that still lend strength to the homelands. In the new factories the Europeans could profitably use vast amounts of raw materials. At the same time they needed to sell the products of their factories. The new colonies, then, served both as a source of supply and a market. The improved transportation made it possible to ship the goods cheaply. And the Europeans' superior weapons, gifts of the Industrial Revolution, helped a few men keep control of the distant lands.

As we have seen, certain of the nations of western Europe also had stronger and better organized governments than did most nations in other parts of the world. This, too, contributed to their leadership.

There are many sides, then, to the story of the development of world leadership in western Europe. And if western Europe should decline in leadership, as some people believe it may, the effects would be world wide.

Helps in Learning

1. Does the English "main street" shown on page 304 remind you in any way of the main street in your community? If so, how?

2. The huge power plant shown on page 305 supplies electric light and power to the people of what city? What fuel is used to run this power plant? How is electric light and power supplied to people in your community or near-by communities?

3. Are any of the buildings in your community, or near-by communities, built in modern style, like those shown on pages 308 and 309? As you have learned, this way of building is only one of the many styles we have inherited from Europe.

4. Find your state on the maps on page 238. According to the shading, in what group is your state on the agriculture map? On the manufacturing map?

5. On the maps of Europe on pages 306-307, look for countries in the same group as your state. Are there any countries in the same group on the agriculture map? On the manufacturing map? If there are, make a list of their names.

6. As you have learned, the world today has only a few regions which stand out from all the rest because of exceptional production, power, or influence. We live in one of those regions. Western Europe is another.

Figure 301. One of Europe's busiest ports

© Three Lions

In what ways does western Europe lead in the production of farm products? Forest products? Minerals?

How does western Europe lead in manufacturing? In trade? In power and influence?

What things help to explain how this world leadership came about?

The Industrial Heart of Western Europe

A central group and an outer circle. One of the important things to know about western Europe is that its leadership depends chiefly on only about half of the nations. These are the industrial nations, which include the major colonial powers. It so happens that these nations lie in a single central cluster, almost surrounded by a circle of agricultural countries.

You can find these two groups of nations by looking again at the maps on pages 306-307. Notice, on page 306, the countries in which fewer than 30 in a hundred workers are farmers. These countries, of course, are the least agricultural. They lie in the middle part of the map—Britain, Belgium, the Netherlands, Luxemburg, Germany, Switzerland, Denmark, and Sweden. Moving outward from this cluster, in any direction, we find that the per cent of agricultural workers increases.

Now select the countries on the map on page 307, in which more than 30 per cent of the workers are engaged in manufacturing. Using this measuring stick, Czechoslovakia and France are added to the central group. Moving outward from these, in any direction, the per cent of workers in manufacturing decreases.

The general picture, then, is clear. The nations of western Europe fall into two groups. There is an outer circle of nations that are chiefly agricultural, reaching from

Portugal to Greece, to Finland, to Iceland, to Ireland, and back to Portugal again. Within this circle lies a cluster of nations in all of which manufacturing is of greater importance. This is the industrial heart of western Europe. This is the part of western Europe that contributes most to its world leadership.

What it looks like. The pictures on these two pages show familiar scenes in the industrial heart of western Europe. The picture below was taken near Manchester, in Britain (p. 394), a great center of the cotton textile industry. There are at least two dozen large textile mills within the area shown by the picture.

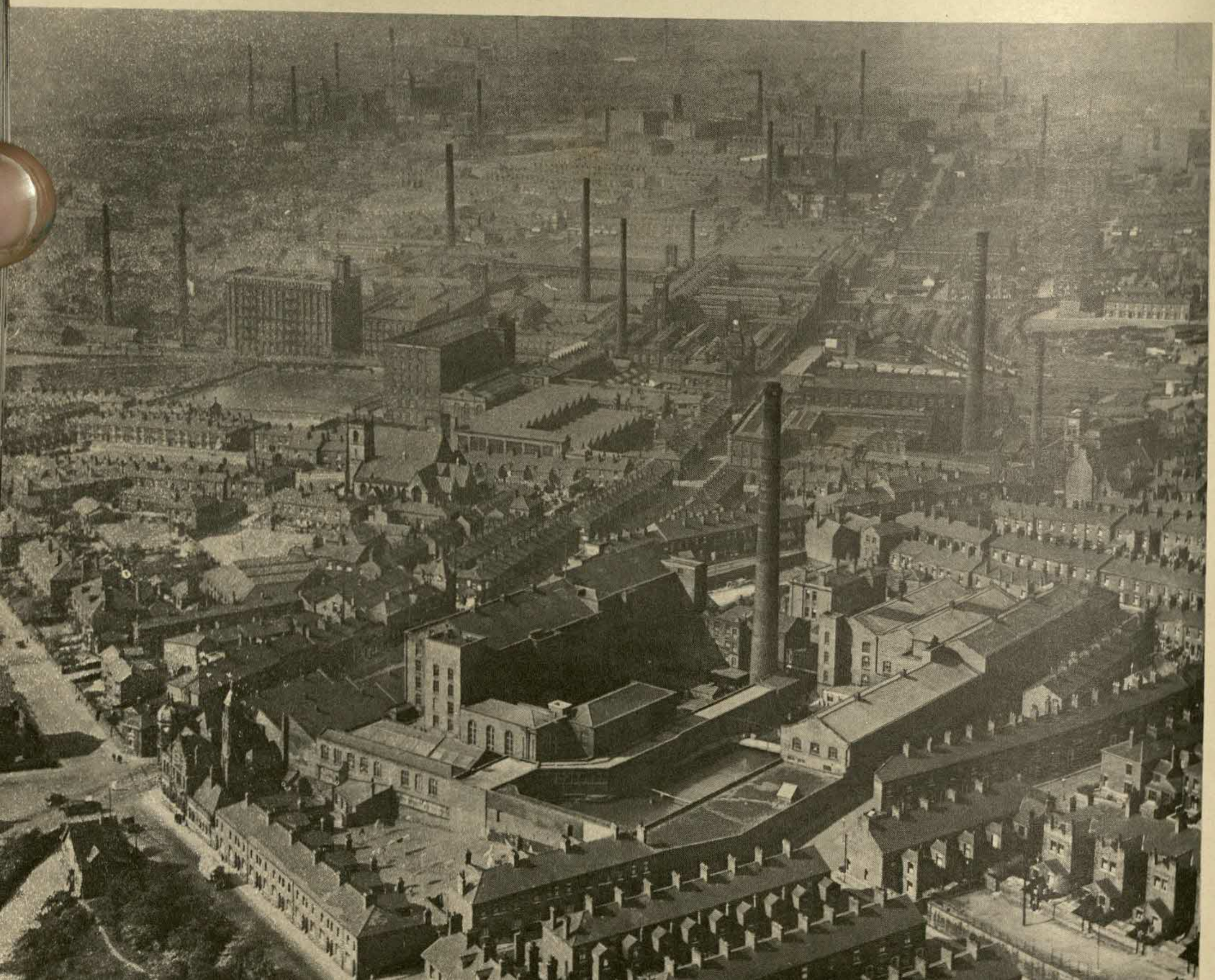
The workers live in the kinds of homes shown in the foreground. Each family has one small section of a long, bleak building that itself looks like a factory. Homes are crowded in among factories. Almost every foot of land is covered by buildings. There is no room for the children to play, except in the dark, narrow streets that seem like mere crevices between the buildings.

This picture was taken in summer, and on a day when little smoke was coming from the factory chimneys. On many days a gray blanket hangs over the entire area. Black clouds of smoke pour constantly from the smokestacks and from the hundreds of chimneys which mark the homes of the workers.

In many parts of the industrial heart of western Europe, this scene might be repeated; yet not everywhere. The picture, page 313,

Figure 302. Homes and factories side by side

© *Ewing Galloway*



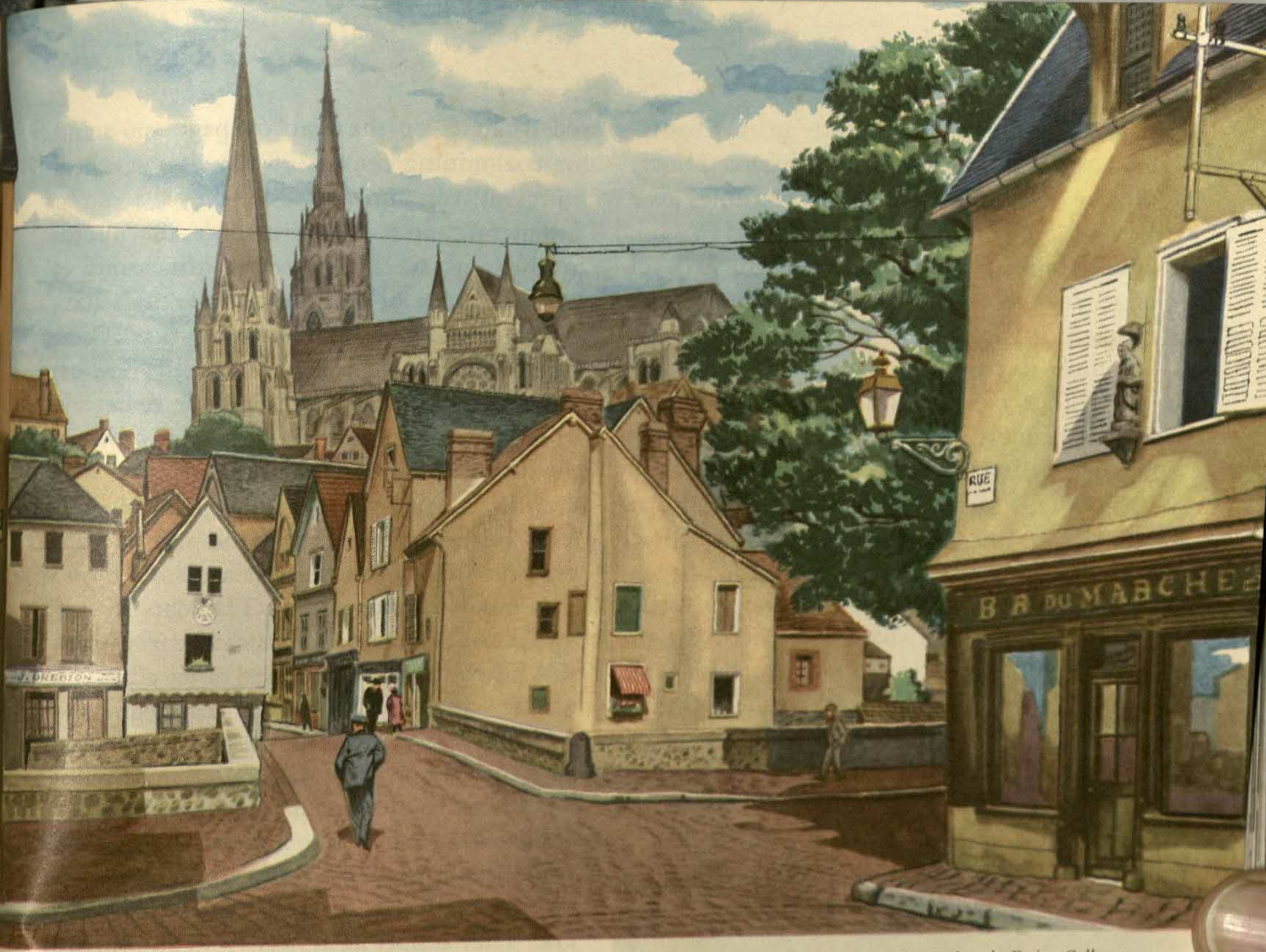


Figure 303. A quiet city in France

From photo by Ewing Galloway

shows another type of community, which is perhaps equally typical. This city, which happens to be in France, is smaller than the one shown on page 312. The scene is brighter and more cheerful. The church on the hill, rather than the smokestack, dominates the landscape.

One reason why this city looks different is that the factories are fewer and smaller, more like workshops. The smaller size of city means less crowding, though probably even here there are not as many parks and playgrounds as there should be. Certainly, however, it is a more pleasant place in which to live than the community shown on page 312.

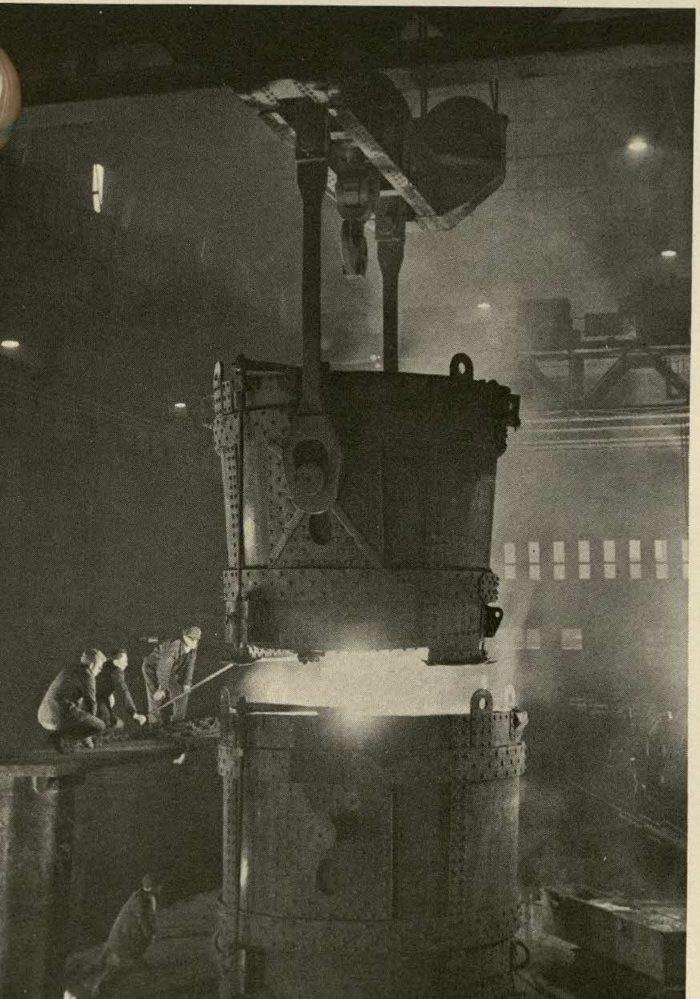
Each of these cities has its place in the industrial heart of western Europe. For this region has a great variety of industries. It has almost every type of factory and manufactured product known to the world. And its industrial communities differ as greatly as the two pictures suggest.

To make the description of the region complete you should add, of course, the pictures of the quiet farm lands which lie round about these industrial cities. In some instances farmers live within sight of the factory chimneys. The soot from the city settles on their houses and crops. They may not complain, however, for in these cities are the chief markets for the things they grow.

Where iron and steel are made. There are three great centers for making iron and steel in western Europe, each of which is really a cluster of separate industrial districts. One is in Britain, chiefly in the group of cities near Birmingham and Sheffield (p. 394). Another is an international district reaching from Essen and Dortmund in Germany, through southern Belgium and Luxemburg, into northeastern France. The third lies near the boundary of southern Poland and Czechoslovakia, not far from Cracow. In each of these regions you may see repeated many times the type of activity shown in the picture on this page—men watching the molten iron, other men controlling huge machines, flames leaping into the sky, and smoke and grime settling over the landscape.

Making iron and steel in western Europe, as everywhere else, requires iron ore, limestone, and much coking coal. And in general, it is desirable to locate the industries close to supplies of coal. In western Europe all three of the great iron and steel-making centers were built within an area of great coal fields, which reach almost continuously from middle England, through Belgium and Germany, to Czechoslovakia. Many of the red triangles on the map on page 300 stand for coal-mining centers. Some of the others represent iron mines.

Figure 304. Heavy industry © *Ewing Galloway*



Pig iron and raw steel are not very useful products as such. Therefore thousands of other factories of many different kinds have grown up in the iron and steel districts. These factories also need coal for fuel. They use products of the steel mills as raw materials. In these factories men make metal products chiefly—everything from hammers to hydraulic pumps, from spades to steam shovels. This has added greatly to the size and importance of these industrial areas.

A hundred other cities. The map on page 394 shows, within the industrial heart of western Europe, about a hundred other cities that are not included in these three regions of heavy industry. Some of these are cities much like the one on page 313, quiet and quaint. Others are more modern and perhaps more industrial. Some are national capitals or capitals of provinces. But in each of the hundred cities there are some factory workers. They supply local needs and also furnish goods for the larger stream of commerce.

The picture on page 315 was taken in a factory in Lyon, France (p. 394), one of these "hundred other cities." As you can see by the map, Lyon is a city of less than 500,000 inhabitants, yet it actually is one of the more important industrial centers of France. Its specialty is cloth, silk in particular. In the picture you see a young woman inspecting bolts of silk cloth before they are exported.

This light manufacturing is typical of the greater part of the industry scattered through these many cities. The products themselves are endless—radios, toys, clothing, shoes, dishes, furniture, food, books, and many other things. Each city may have as its specialty one or more of these products.

Industry based on hydro-electric power. Coal is the great fuel within the industrial heart of western Europe. There are many cities, however, which also have access to hydro-electric power, that is electricity made by the force of falling water. Lyon, for example, uses both coal from a small, near-by coal field and electricity from power plants in the neighboring mountains.

Out near the edge of this central cluster of manufacturing nations, several minor industrial districts have developed, based almost entirely on hydro-electric power. One district is in Sweden and Norway. Another is in eastern Spain, near Barcelona, which uses power generated in the Pyrenees. The most outstanding is in the Alps, reaching from France and southern Germany, across Switzerland, and into northern Italy. In Switzerland alone it would take more than two million tons of coal a year to do the work now done by hydro-electric power.

Western Europe is one of the world's leaders in the use of this energy, and its use is increasing yearly. The time may well come when hydro-electric power will be an important export of countries such as Norway, Sweden, and Switzerland.

Helps in Learning

1. Find on the map on page 307 the central group of nations in which more than 30 per cent of the workers are engaged in *manufacturing*. Make a list of these countries.

Does this group of countries, or the countries in the outer circle, make up "the industrial heart of Europe"?

Which group has contributed most to world leadership?

2. Count the factory smokestacks visible in the picture on page 312. Now count as many as you can of the chimneys on the houses.

What health problems, then, do the people of this city have that people in the city on page 313 do not have?

In which kind of city do you think daily living would be more pleasant? Why?

3. Do you live in a community, or know of a community, where smoke has been a problem? Some communities in our country have smoke control programs. If you know of such a program, describe how it helps the community.

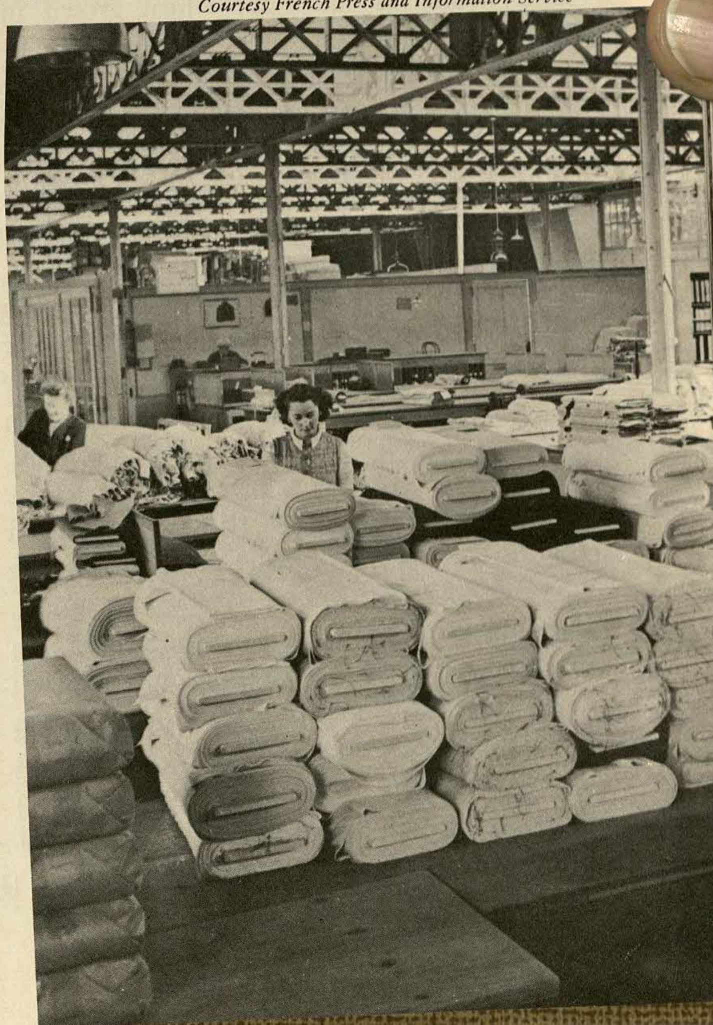
4. As you have learned, there are three great centers for making iron and steel in western Europe. Where are these three centers? Find the approximate location of each one on the map on page 394.

What valuable natural resources in or very near these three areas help to explain why men have built up great iron and steel industries there?

Networks of Trade and Transportation

Local trade. The picture on page 317 was taken in a market town on the western coast of Norway. Some of the fruits and vegetables that you see probably were grown on farms only a few miles away. Some farmers brought their produce to market in boats. Others used wagons, and some farmer may have used a truck, though that is not likely. Most of

Figure 305. Light manufacturing
Courtesy French Press and Information Service



the customers walked or rode on bicycles to this open-air market. There are shops in the town, also.

Western Europe has thousands of other local centers of trade and transportation. They are found wherever people live, in or out of the industrial heart of the region. When reading about trade on a larger scale, we must not forget this highly important activity that goes on, day by day, in every community.

Trade within nations. Each nation in western Europe also has trade between city and country in the nation as a whole, and between one part of the nation and another.

Spain illustrates this well. As you can see by the temperature map, pages 374-375, the southern border of Spain is warm in winter. The rest of the country is cool or cold. Chiefly for this reason oranges and lemons may be grown in that southern section and not elsewhere in Spain. Naturally, then, one type of trade within Spain is the exchange of fruits from the south for wheat grown in lands farther north.

A glance at the map on page 300 suggests that similar illustrations could be drawn from any of the other countries in western Europe. Within each nation there is enough difference in natural resources to encourage trade between one section and another.

Currents of international trade—within western Europe. There also are currents of international trade, flowing continuously from country to country within western Europe. The European Recovery Program, after World War II, called attention to the importance of this trade. It was announced that one of the goals of the program was the increase of trade from country to country. Another goal was to increase the production of these countries. This program involved large gifts and loans from the United States to some of the nations in western Europe. It was designed to help them recover from World War II. And it was recognized that those nations could not fully recover until international trade was re-established.

Some currents of international trade in western Europe are like minor branching streams. For example, Norway sells fish to Germany. The Netherlands exports flowers to Britain. France imports cork from Spain.

The broad, main streams of trade, however, flow directly to and from the great industrial heart of western Europe. It is most significant that, in normal times, most of the countries in the outer circle find their chief markets in either Britain or Germany. In the years before World War II, most of these nations bought more from either Britain or Germany, than from any other nation.

In fact, for more than half of the countries in the outer circle, Germany was the greatest single market and source of supply. As a result of World War II, Germany's trade sharply declined, but has been recovering. The former enemies of Germany, as well as its allies, have aided in that recovery, for they discovered that Germany's trade contributed to their own recovery. Germany, with its mines and factories, and its central location, remains an essential part of western Europe.

If you stop to look at the goods that move along in these main currents of trade, between inner and outer Europe, there are few surprises. In several countries, coal is the major import. These include Denmark, France, Sweden, and Switzerland. All of these lie outside the major coal fields described on pages 313-314. In several other countries coal is an important import, though not the chief one.

As you would expect, the chief exports of the 10 nations in the industrial heart of Europe are coal or manufactured goods, chiefly machinery and textiles. The outstanding exports from the countries of the outer circle are raw materials, ranging from wool, cattle, and butter to wheat, fish, lumber, and wood products.

© *Ewing Galloway*

Figure 306. Trade that is local

The industrial nations of the inner, industrial heart also have a great trade with each other. Such trade is considerably greater than that which is carried on with the nations of the outer circle. This results in one of the surprises that you noted in your study of the United States (p. 256). Our country trades more with other industrial nations than with lands which are largely agricultural. This is true, also, of most of the industrial nations of western Europe.

Trading routes. The pictures on pages 318 and 319 show the two types of transportation most used between the nations of western Europe. In the use of both railroads and inland waterways, western Europe has advanced far beyond the rest of Eurasia. The transportation map (pp. 388-389) shows that most parts of western Europe, except the far North, are reached by good transportation.

The map on page 394 can show only a few of the main railroads, focussing chiefly on Paris and Berlin. Actually there is a vast number of other railroads. There are so many, in fact, that if all of them were drawn on this map, you would need a microscope to distinguish between them in certain areas, Belgium and Britain, for example. Each line standing for a railroad would be so fine, and the lines would be so close together, that they could scarcely be counted.

The Rhine and the Danube rivers are only two of thousands of inland waterways in western Europe—lakes, rivers, and canals. But they are the greatest two. Perhaps no river on earth has been so highly developed as the Rhine, which is navigable from the sea to the border of Switzerland (p. 394). The picture on page 319 shows boats on the Danube. Men who sail this river may see a half dozen

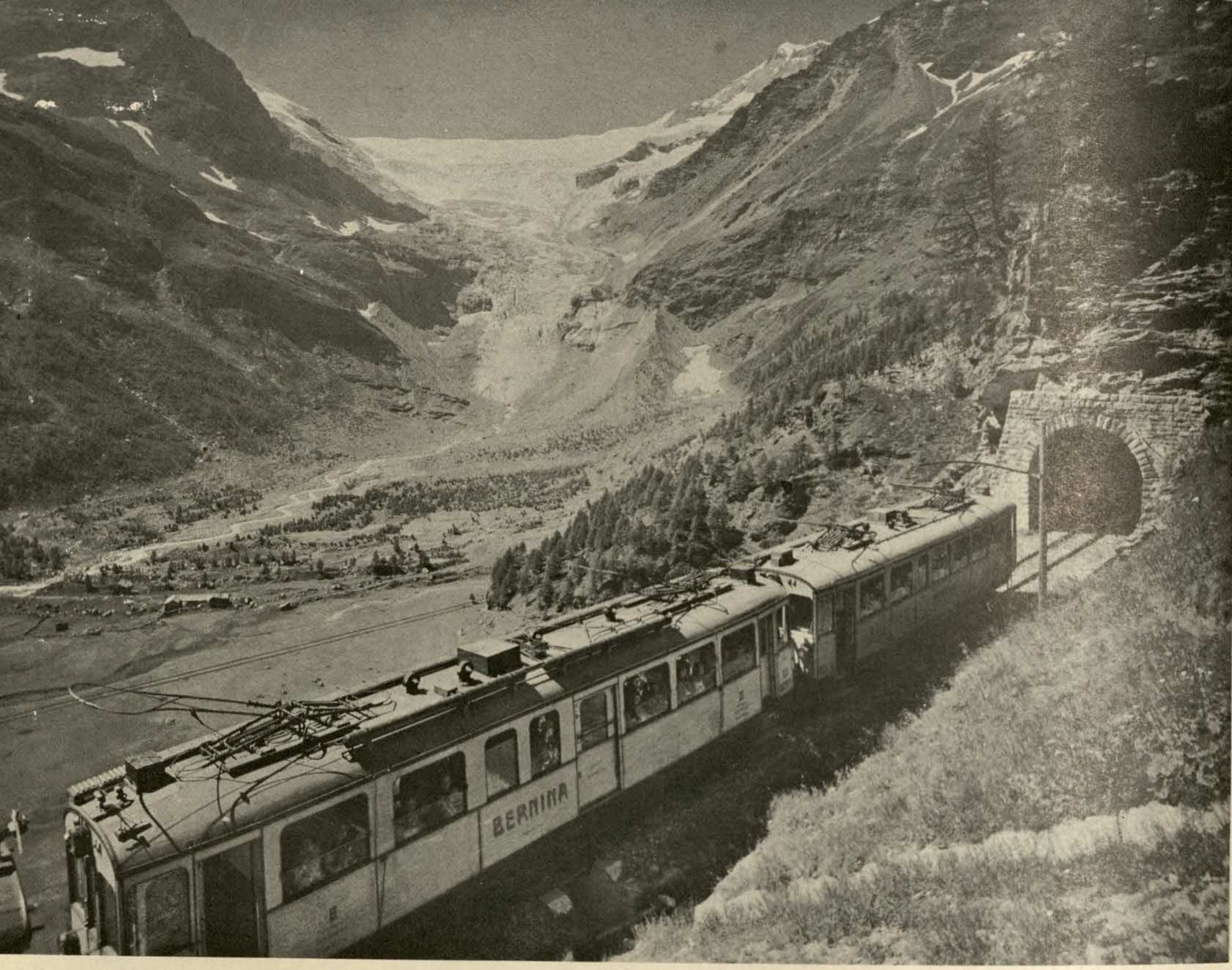


Figure 307. One of many railways

Courtesy Swiss Federal Railroads

different countries during one trip from Germany to Rumania and the Black Sea. As you would expect, the chief cargoes moving downstream on the Danube are manufactured goods and coal. The chief cargoes moving upstream are raw materials, including grain from farm lands in southeastern Europe.

The ocean itself is another outstanding highway for trade from nation to nation. Look again at the map on page 394. Notice how far the long arms of the sea reach into western Europe from the north, the west, and the south. No other land of similar size is so fortunately arranged for ocean transportation. No other land makes so great use of it (p. 378).

Restrictions. Nature offers few great barriers to trade in western Europe today. It is true there are many mountains (pp. 380-381, 394). But in most of these mountains there are passes, many of them fairly low. Furthermore, for centuries the people have been working to overcome the barriers that nature set up. They have been building bridges and viaducts. They have cut away the rock to make some of the slopes less steep. In many places they have dug tunnels through the mountains, as is illustrated by the picture above. This train literally runs *through* the Alps between Switzerland and Italy. It is electrified, as are most trains in that area.

Man, not nature, sets up some of the greatest restrictions to trade in western Europe. As you have read (p. 302), trade is held back partly because there are many small countries and, therefore, many international boundary lines to cross. In nearly all cases, men must pay a tariff, or tax, as goods are

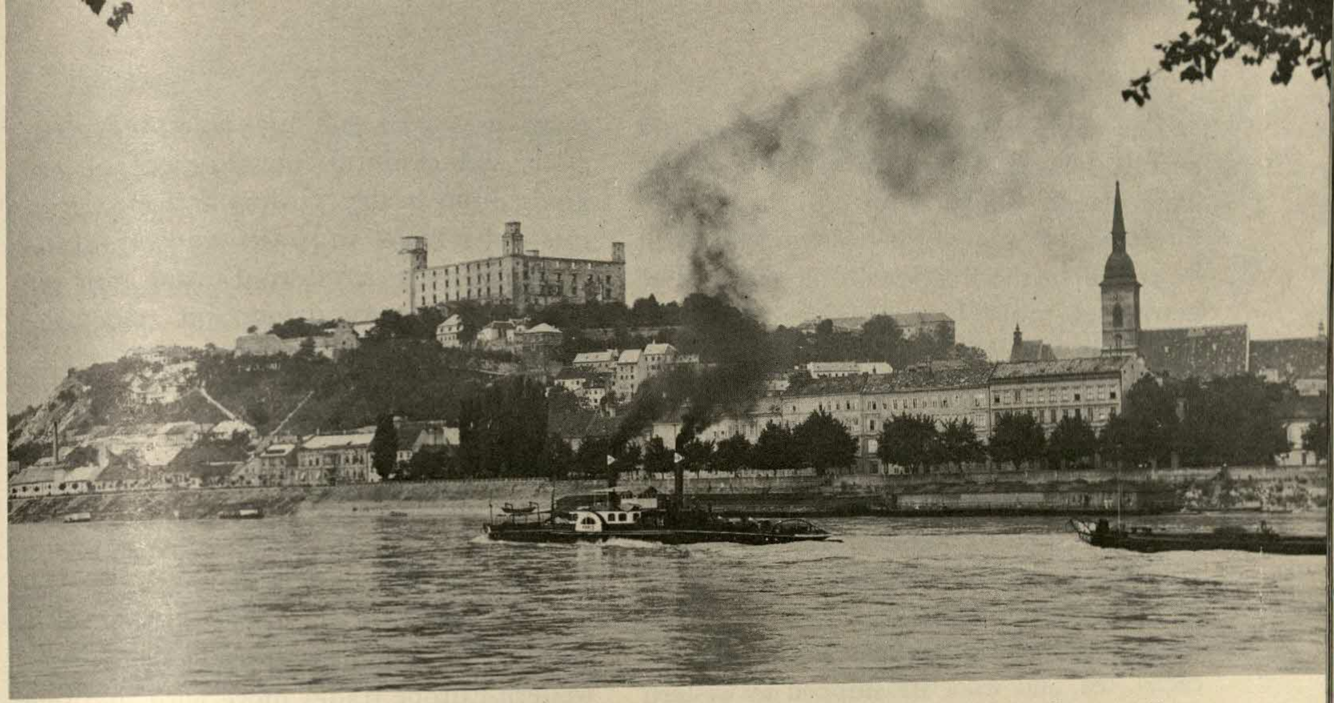


Figure 308. On the highway of the Danube

© *Ewing Galloway*

shipped from one nation to another. The very fact that trade is international means that two or more nations are involved. This can cause delay and complications in carrying on trade. For example, special permits may be required from several governments, and there may be difficulty in exchanging one kind of money for another.

Following World War II, there was another barrier to trade in western Europe. This was sometimes called the "iron curtain," drawn across the continent from the Baltic Sea to the Adriatic (p. 394), cutting both Germany and Austria in two. To the east were Russia and the nations under its influence or control. To the west were other nations, who looked to the United States for economic aid and to some extent for political leadership. Actually, in one way or another, most of the peoples of eastern Europe were brought under the control of Russia. And most of their trade was with Russia although normally it might have gone to the industrial countries of western Europe.

The nations to the west therefore found their trading territory had shrunk to roughly half of the normal area. The trade on the Danube was almost cut off at a point in Austria, where the "iron curtain" crossed the river. No river boats of any importance sailed back and forth between east and west. People in all parts of western Europe suffered loss by these and similar restrictions.

The years following World War II saw also the breaking down of some restrictions to trade in western Europe. Belgium, the Netherlands, and Luxemburg entered into an agreement which gave them the name *Benelux* countries. This new word is a combination of the first letters of each country's name.

To begin with, these three countries have agreed to reduce somewhat the tariff barriers between them. There are still tariff walls which separate them. But these walls are lower than those that separate them from other countries. The Benelux nations hope some day to remove completely the tariff walls between them. Perhaps this is a forecast of a better day for trade between the various nations of western Europe.

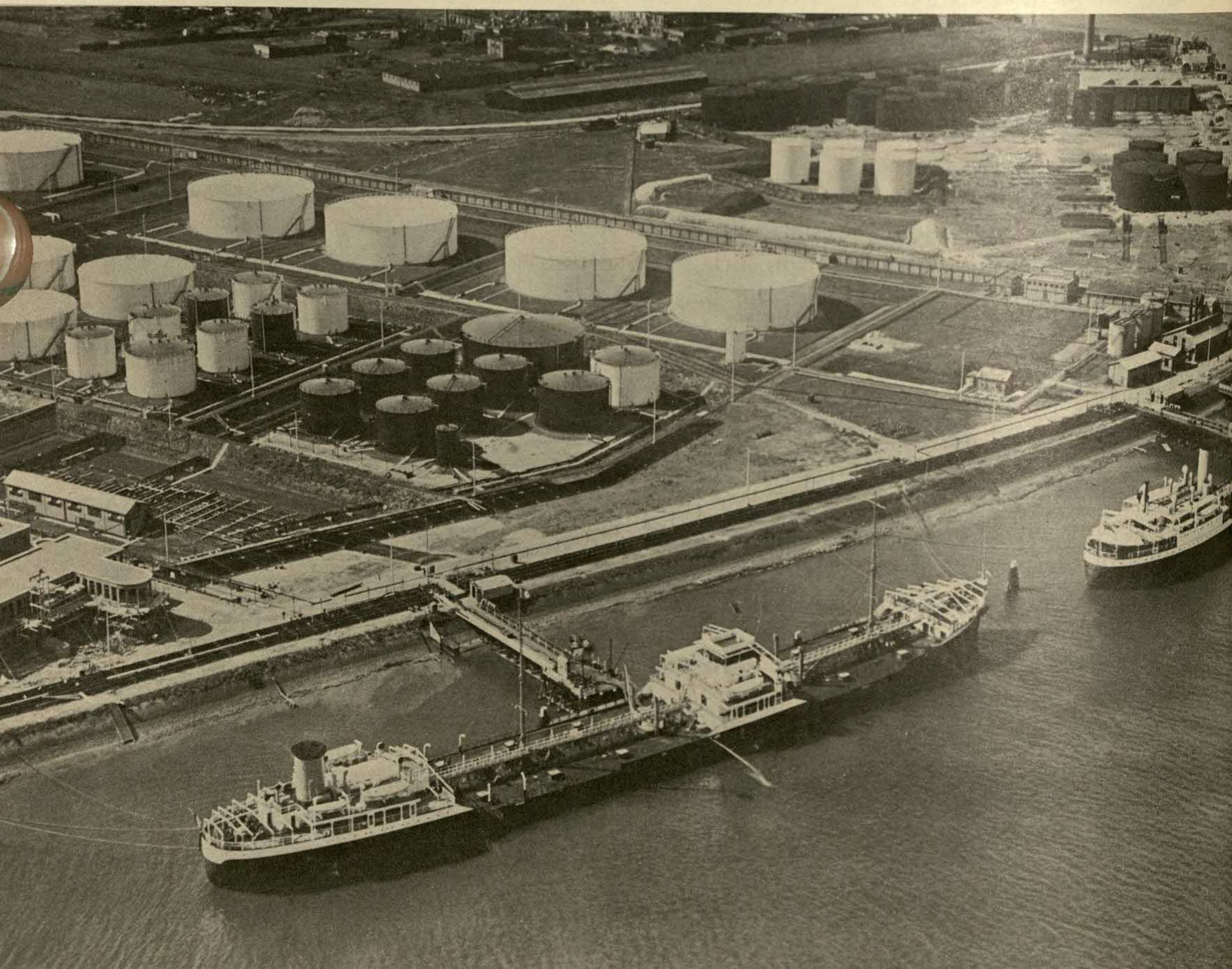
Western Europe and world trade. This peninsula reaching out from the mainland of Eurasia is the chief center of trade in the world, as you read on page 309. And the nations of the industrial heart of western Europe are chiefly responsible for this leadership.

The ships in the picture below are oil tankers lying at anchor in a harbor in the Netherlands. They have brought tens of thousands of gallons of petroleum which will be stored in the huge tanks on shore. The petroleum probably came either from the Near East, from Indonesia, or from South America. Western Europe has little petroleum and must import large quantities of this essential fuel.

Petroleum illustrates the nature of many of the imports of western Europe. They are raw materials from the mines, farms, and ranches of the world. For example, large amounts of cotton, coffee, rubber, cacao, tea, and wool are shipped to western Europe from other lands. In return, ships carry away coal and manufactured goods—cloth and clothing, metal goods of many kinds, from bridge girders and electric motors to hammers and saws, and a multitude of other items. Western Europe, this great center of manufacturing and trade, then, gathers in raw materials from the ends of the earth. It turns these raw materials into useful products and then sends the finished goods back to Teheran or Singapore, Bombay or Santiago.

As you read earlier, the countries of western Europe have political ties with many lands, particularly in southern and eastern Asia, and in Africa. Yet surprisingly enough western Europe trades more with the American continents than with all the rest of the

Figure 309. Oil for western Europe *Courtesy Netherlands Information Bureau*



world. One important reason is that many people in Africa and Asia live close to the subsistence level, producing little for export, and therefore buying little from abroad.

Of all nations, the United States is most important in the world trade of western Europe. As you will recall, western Europe is, also, of very great importance in the foreign trade of the United States (p. 256).

Helps in Learning

1. You have seen how the trade of western Europe is made up of local trade, trade within nations, and international trade. You probably can find in your own community products which suggest each of these types of trade.

Products sold in stores in your community may be listed under these headings: *Local Trade, Trade within the United States,* and *International Trade.*

Under the first heading, list things grown or made near-by. Under the second heading, list things grown or made in other parts of our country. Under the third heading, list things grown or made in foreign countries. For example, this third list might include those products shown in the pictures on page 90.

2. What do the export and import maps on pages 254-255 show about the importance of the international trade between the United States and western Europe?

3. Why can only the *principal* railroads, and not *all* the railroads, in western Europe be shown on the map on page 394?

4. Find western Europe on the map of ocean trade routes (p. 378). Does this map suggest that western Europe is important, or unimportant, in world trade? Why?

5. What barrier of nature have men partly overcome in the picture on page 318? What have they done to overcome it? What kind of power is used to run this train? How can you tell? This picture suggests several reasons which help to explain why Switzerland has become one of the world's great tourist centers. Which reasons are natural, and which are man-made?

6. The train in this picture runs between what two countries? What must people do, in nearly all cases, when they travel from one country to another?

Do you think it is easier for travelers to cross a state boundary in our country, or to cross an international boundary? Why?

7. What is carried by the ships in the picture on page 320? What is stored in the tanks? Give a reason why large quantities of this product are imported into western Europe.

8. What are the Benelux countries? What have these countries agreed to do in order to promote the flow of trade?

9. Do the nations in the industrial heart of western Europe trade more with each other, or do they trade more with the agricultural nations in the outer circle?

Does the United States trade more with other industrial nations, or with nations that are chiefly agricultural?

10. What are the chief kinds of products that move back and forth in the trade between the nations in the industrial heart of western Europe and the nations in the outer circle?

The Nations of Western Europe—Today and Tomorrow

The successes, the failures, the hopes, and the problems of western Europe are those of the countries in it. A view of the separate nations, therefore, will increase your understanding of what western Europe is like today, and what it may be like tomorrow.

Britain, an island nation. The full name for Britain is the United Kingdom of Great Britain and Northern Ireland. Sometimes it is called simply the United Kingdom or Great Britain, instead of the still shorter form—Britain.

Britain is the central unit of the great Commonwealth of Nations, that occupies land in every inhabited continent. The vast lands and hundreds of millions of people in this Commonwealth have greatly increased Britain's power and influence, as you have seen.

Fishing towns dot the coast of Britain and farming is spread widely over the land

(p. 300). But agriculture accounts for only about five workers in a hundred. There are almost as many miners as farmers in the country. No other important nation on earth has a larger per cent of its workers engaged in mining. Yet the chief work of Britain is manufacturing (p. 307).

Britain depends on trade more than does any other nation in western Europe. Its ships sail the oceans of the world, carrying goods for many nations. At home, the farmers cannot produce nearly all the food that the British people need. Fortunately, Britain does not need all the goods produced in the factories, nor all the coal dug from the earth. So the surplus coal and manufactured goods can be exported, and the essential food and raw materials imported.

For years after World War II, Britain was unable to produce enough surplus goods at home to buy abroad all the things that the people wanted or needed. So, for a time, food and clothing were rationed, and life in general was difficult. In the future, as in the past, Britain's prosperity at home and influence abroad will depend in large measure on how successful Britain is in balancing imports and exports.

Germany, old and new. Germany, like Britain, is a land of cities. Each of these two nations has several dozen cities of more than 100,000 population (p. 394). The per cent of workers engaged in manufacturing in both countries is about the same. Yet about 26 German workers, in every 100, are farmers. This is about five times as large a per cent as in Britain. The picture on page 323 shows one German farmer, who lives in mountainous southern Germany.

The German nation is one of the newer nations. A century ago this area was occupied by a group of small and largely independent states. Then they were combined to form modern Germany, which for a time was one of the strongest nations in the world. It had rich colonies in Africa. The people were well known for their skills in science and manufacturing. But Germany was defeated in two world wars. Now its colonies are gone, and its future is largely in the hands of the victors. Russian control still is strong in eastern Germany, while France, Britain, and the United States have helped western Germany develop as a free country.

France. The story of France as a nation goes back hundreds of years. It is one of the older countries of Europe. There are French lands in Asia and Africa as well. France has a great tradition in love of freedom, for individuals and nations alike.

France is said to have a better balance in work than any other country in western Europe. France has many people employed in agriculture as well as in manufacturing. France has become known, also, as a somewhat divided country, especially in politics. For example, the interests of the farm people seem to differ sharply from those of the factory workers. The farmers in general are cautious and slow to change. The factory workers are less so. This is only one of many divisions that appear to have developed in the France of recent times. Perhaps its place in the Europe of tomorrow will depend in large part on how well the various groups within France can work together.

Italy. This boot-shaped country reaches south into the Mediterranean, and includes the islands of Sicily and Sardinia (p. 394). In ancient times, this peninsula was the center of the Roman Empire. Then for years it was divided into separate little nations. In the last century, these were combined, somewhat as in Germany, to form modern Italy. Italy was on the winning side in World War I, but on the losing side in World War II.

Italy has had colonial possessions in Africa, but most of these were lost after World War II.

Like France, Italy has few big cities. There is a larger per cent of workers engaged in agriculture in Italy than in France. Nearly half of the Italian people make their living from farming. Manufacturing is correspondingly of less importance (pp. 306-307).

Years ago, as you read, millions of Italians moved to the United States. Smaller numbers went to South America, in each instance partly because of lack of opportunity at home. This suggests one of Italy's greatest problems today—how to find work for many people in an area rather poor in natural resources.

Spain and Portugal. These two countries resemble Italy in land and weather. They also resemble Italy in being chiefly agricultural lands, in the outer circle of western Europe. The pressure on the land is not nearly so great in Spain and Portugal, however, as in Italy. These are far more thinly settled lands (pp. 370-371). Spain and Portugal together are almost twice the size of Italy, but they have a much smaller population.

Spain and Portugal once were among the great and powerful nations of the world. They were leaders in world exploration. Spain's empire in the American continents was larger than all western Europe. Now the Spanish and Portuguese colonies are limited to some of the poorer lands in Africa. There is little to indicate that these two nations will soon again be world leaders.

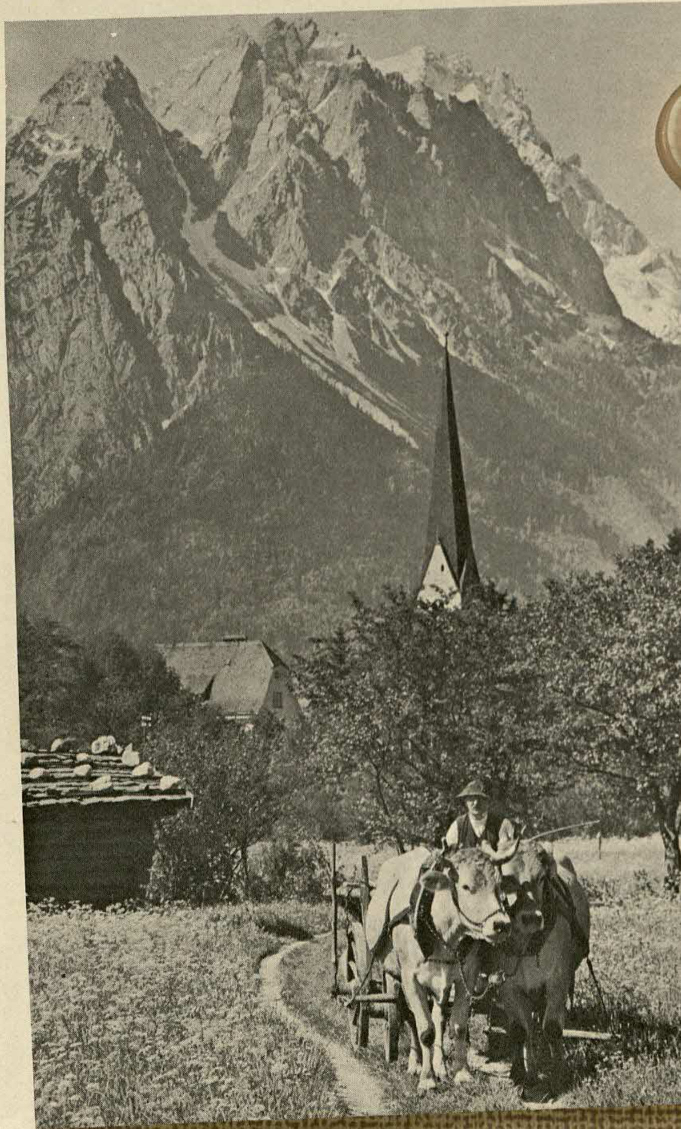
Scandinavia and Finland. Sweden, Norway, and Denmark are commonly known as the Scandinavian countries. Sometimes Finland also is included in the group. All four countries are northlands, farther north than any part of the United States.

The population of these four countries is surprising indeed. All together their population is less than that of New York State. The population of the Chicago urban area is roughly the same as that of Finland, or Denmark, and somewhat greater than that of Norway. One explanation for the relatively few people is the small amount of cultivated land (pp. 384-385), nearly all of it in the southern third of the area as a whole (p. 300). The population map (pp. 370-371) also emphasizes the lack of resources farther north. Sweden and Denmark have gone far ahead of the other two in manufacturing.

Scandinavia and Finland have become widely known for their high standards of literacy and health, and for the extent to which the people cooperate in business and politics. This cooperation probably has contributed to their prosperity. And in the years ahead it may well help them remain outstanding countries in western Europe, though they are small nations.

The picture at the top of page 325 shows a family in Finland. The parents and children are sitting in the living room in the late afternoon. The furniture is as modern and the home appears as comfortable as the best in most other lands. Undoubtedly this pic-

Figure 310. In southern Germany © *Black Star*



ture shows a situation that is better than the average. Yet there are thousands of other homes much like this in many countries in western Europe.

The Benelux countries and Switzerland. Except for Albania, the Benelux countries and Switzerland are the smallest four countries in western Europe, named on the map on page 394. The area of all four put together is not as great as the area of Pennsylvania. They are thickly settled areas, however, as is shown by the map on pages 370-371. The Netherlands, for example, has about three million more people than Sweden.

In all four countries, manufacturing is far more important than agriculture. There is a constant flow of goods in both directions across the borders. Belgium has a great colony, the Belgian Congo, in Africa, and the Netherlands is connected with the United States of Indonesia. Yet Switzerland, without any colonies, is equally prosperous.

These small countries have had some difficulty in getting along, crowded in between their larger neighbors (p. 394). In both world wars, the armies of Germany marched across Belgium into France. The Netherlands was quickly conquered at the start of World War II, and suffered greatly while it was occupied by foreign troops. Switzerland alone was able to keep out of these wars, partly because its mountainous land is not a good highway for armies. Only as peace is established widely in the world can such small nations feel secure.

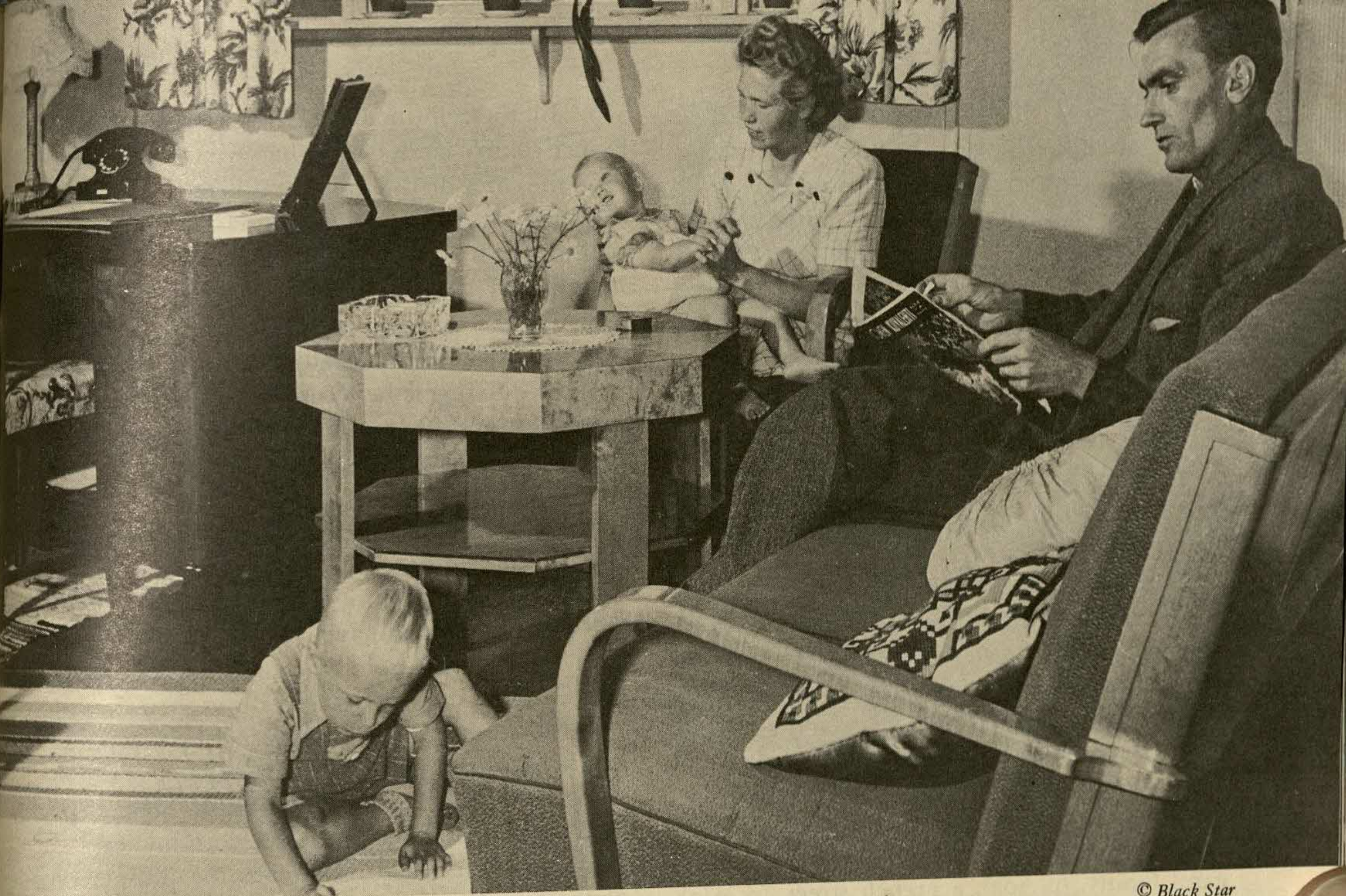
Nine other nations. There are nine countries in eastern Europe, lying between Germany and Italy on the west, and the Soviet Union to the east. They are Poland, Czechoslovakia, Austria, Hungary, Rumania, Yugoslavia, Bulgaria, Albania, and Greece. Some of the differences between these nations are shown by the maps on pages 300, 306, and 307. In Czechoslovakia, which belongs to the industrial heart of western Europe, there are about as many factory workers as farmers. The eight other nations are much more agricultural.

These nine nations also have some things in common. The picture at the bottom of page 325 illustrates one of them. The boys are playing ball in a village in Czechoslovakia. The houses, and the furnishings in them, are less modern than those shown in the picture at the top of page 325. This calls attention to the fact that, in general, the people of eastern Europe have taken less advantage of modern developments than have the people of northwestern Europe. For one reason they have not been able to afford them. The homes in the picture may be comfortable and spotlessly clean, but they represent the older Europe rather than the newer Europe.

Throughout these nine nations, great changes now are taking place. Some are associated with changes in government that followed World War II. The ways of working in all of these countries, except Greece, have been directly influenced by the Soviet Union. Many large estates which once employed hundreds or even thousands of farm laborers have been broken up. Some factories have been taken over by the government. Only time can tell how great the changes will be.

Western Europe in the world of tomorrow. For many years, the people and the nations of western Europe will feel the effects of World War II, the most devastating war in history. They are recovering from the physical destruction of the war, but it takes a long time for all the homes and factories and bridges and highways to be rebuilt.

It may be even longer before the people recover from the tension, strain, and confusion of the War. The adjustments which must be made to new conditions in western Europe and in the world will be difficult. They will require courage, imagination, and cooperation on the part of the people of these nations. They will require, too, all the technical ability and the political experience that these nations possess.

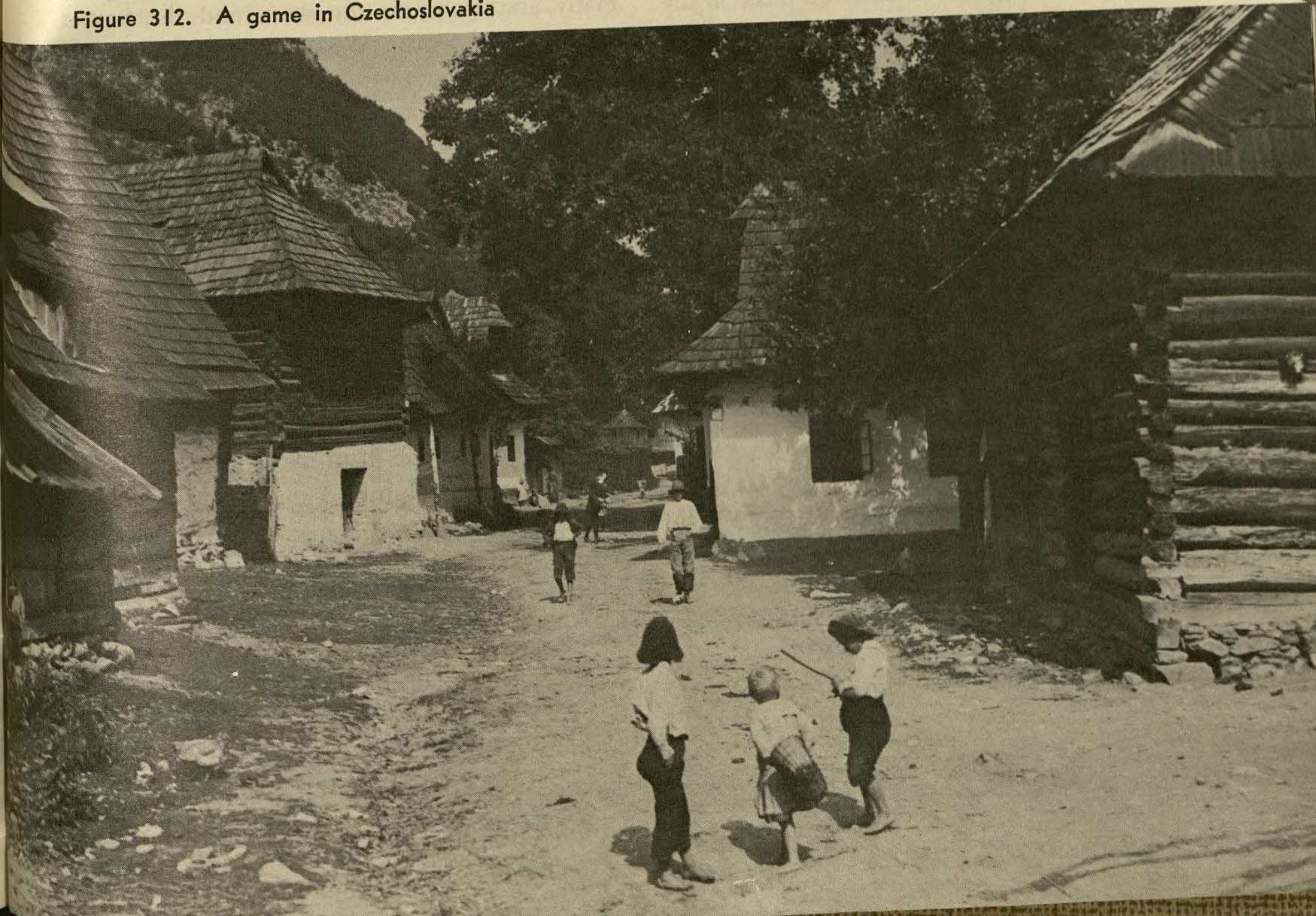


© *Black Star*

Figure 311. At home in Finland

© *Ewing Galloway*

Figure 312. A game in Czechoslovakia



Helps in Learning

1. How does the map on page 378 suggest that Britain is a great trading country?

What kinds of things do the British people import? What kinds of things do they export? Why do they depend for their very lives on their trade with other peoples?

2. On the maps on pages 394 and 160-161, find a striking way in which Britain and Germany resemble each other.

3. The map on page 307 shows another way in which Germany resembles Britain. What is it?

According to this map, are Germany and Britain in the industrial heart of Europe, or in the outer circle of nations?

4. What striking difference between Germany and Britain is shown on the agriculture map (p. 306)? Do you think this is an important difference? Why?

5. France is said to have a better balance in work than any other country in western Europe. How do the maps on pages 306-307 suggest this?

6. Look again at the pictures of a French farm family (p. 102), a French street (p. 313), and a French factory (p. 315).

What must these various groups of French workers *do* if France is to take the place in the world of tomorrow which the resources of the country make possible?

7. In the continent of Africa, Britain and France control lands larger than western Europe. Find the chief British lands and French lands on the map of Africa (p. 390). How may these political ties with African lands strengthen Britain and France?

8. On the map of western Europe (p. 394), find the Mediteranean countries of Europe.

What differences between these lands and the rest of Europe are shown on the July temperature map on pages 376-377?

9. The population map on pages 370-371 suggests one of Italy's greatest problems. What is this problem?

10. According to the population map (pp. 370-371), the Scandinavian countries and Finland differ sharply from much of the rest of western Europe. In what way?

What reason for this is suggested by the January temperature map on pages 374-375?

11. What things in the Finnish home (p. 325) are commonly seen in American homes?

What reasons help to explain the prosperity of the Scandinavian countries and Finland?

12. What new problems came with World War II to the nine countries lying between Germany and Italy, on the west, and the Soviet Union, on the east? What new problems came to Germany?

The Soviet Union

A vast, wide-spreading land. The pictures on page 327 show two places that are more than 4000 miles apart. The bee-keepers, shown in the upper picture, live near the Black Sea (pp. 386-387). This is the European side of Russia. The port of Vladivostok, where the lower picture was taken, is on the Asiatic side of Russia, farther *east* than any part of China. Both places are within Russia. The Soviet Union is indeed a vast land, reaching from western Europe to the Pacific Ocean.

You can use a string on a globe to illustrate this vastness in another way. Measure the distance from New York to the boundary between Czechoslovakia and Russia. Then see how far it is from that boundary to the far eastern tip of Russia. You may be surprised to discover that the distance from New York to the Russian boundary at Czechoslovakia is less than the distance across Russia.

The graphs and statistics (pp. 396-400) emphasize the same fact. Russia is by far the biggest country in the world. It is larger than the entire continent of South America, for example, and much more than twice the size of the United States.

Both European and Asiatic. Is Russia a European country or an Asiatic country? The answer is "both." For a long time, the Ural Mountains, along the 60° meridian in Russia (pp. 386-387), were considered the boundary between Europe and Asia. But Eurasia is one continent, not two. Actually, the words European and Asiatic refer to the two sides of the same continent. And in the midst of this single, vast continent of Eurasia is Russia, *both* European and Asiatic.

Because of its location, Russia has interests and influence in both West and East. You have read of its power and influence in western Europe (p. 319). In the Far East, also, the Soviet Union is a major power. It has strongly influenced what has happened in China and Korea.

In the autumn of 1949, the Chinese Communists won control of most of China. Since that time, the Soviet Union and China have worked together closely. In 1950 the Communists of North Korea attempted to conquer the Republic of Korea. They were prevented from doing so by United Nations forces in a long and bitter struggle. In many parts of the world, people fear the spread of Communism. They know that with Communism comes the loss of many individual freedoms.

How the Russians use their land. The map on pages 280-281 gives us a graphic picture of land use in Russia. The contrasts are striking. In western Russia, farm lands reach from the Baltic Sea to the Black Sea. Toward the east the farm belt becomes narrower and narrower, and disappears entirely in about the middle of the huge country. To the south of this farm belt are the grazing lands. To the north and east are the thinly settled lands of forest work, hunting, trapping, and fishing. The mining areas are chiefly near the Black Sea, along the Ural Mountains, and in Siberia, which is the name for the northern and eastern part of the Soviet Union.

There are reasons, of course, for this pattern of land use. You will recall that much

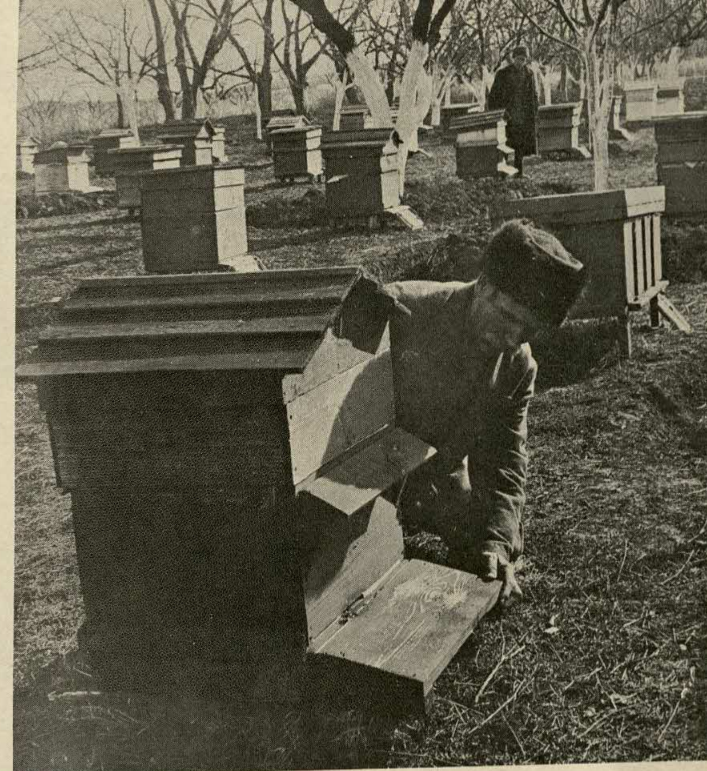
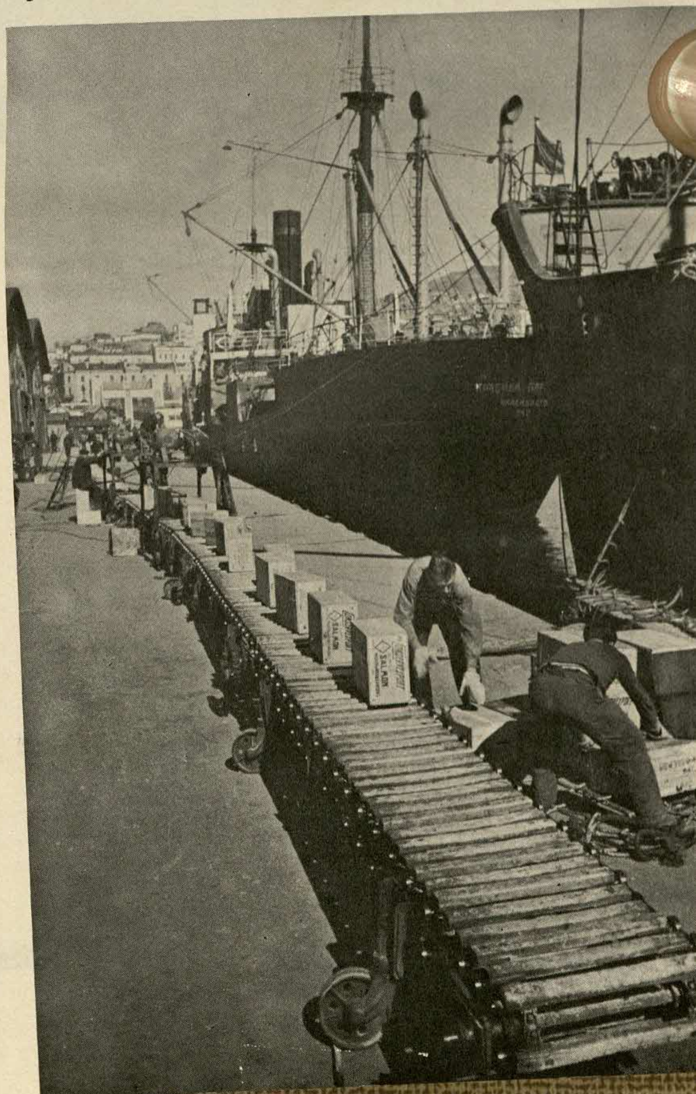


Figure 313. Near the Black Sea © *Sovfoto*

Figure 314. In Vladivostok © *Sovfoto*



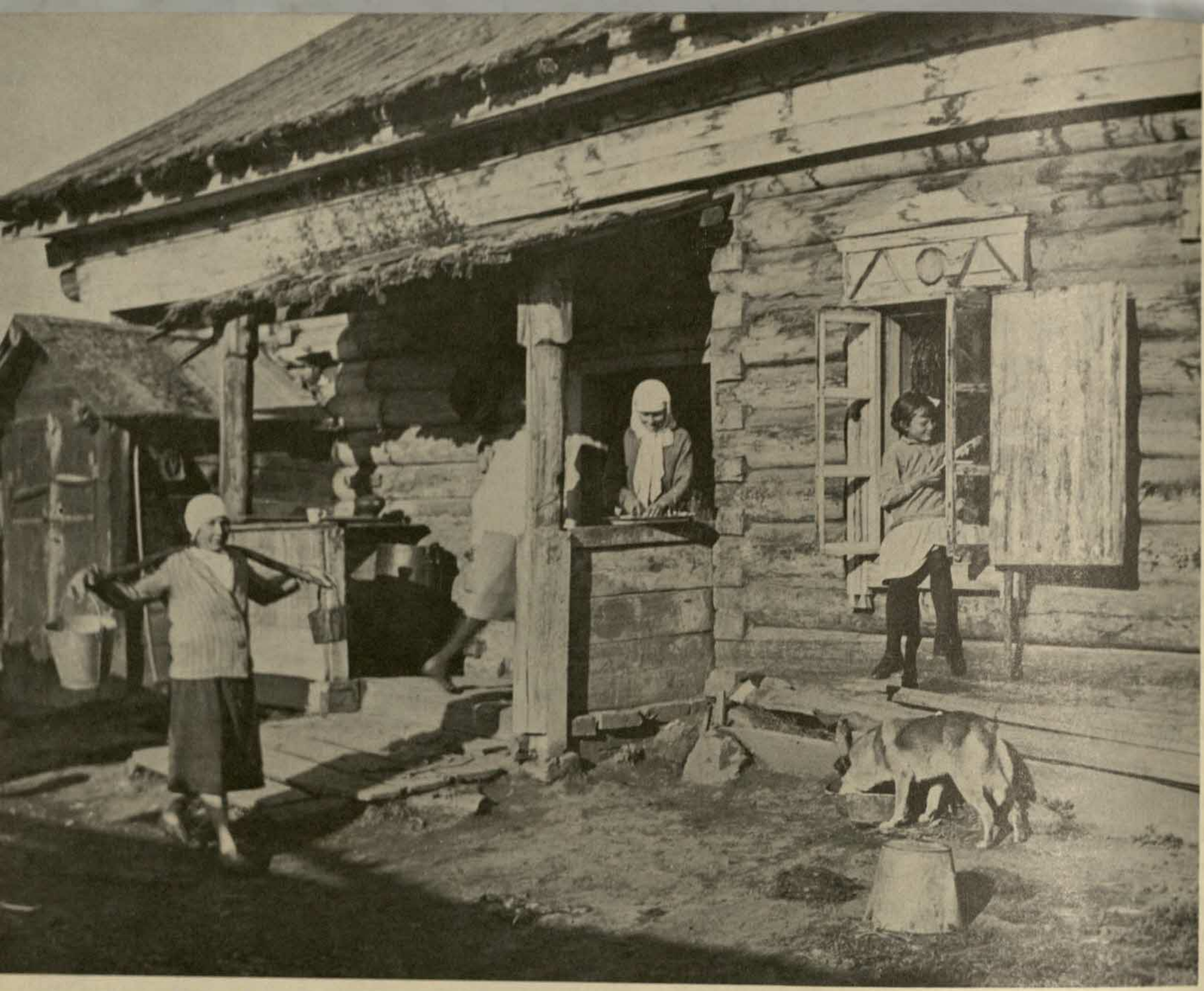


Figure 315. A frontier home in Siberia

© *Julien Bryan*

of the area is too cold, too dry, or too mountainous for farming.

Frontier settlement. The picture above shows a home which a Russian farm family recently built in Siberia. This family probably came from the western part of Russia. Their house resembles the pioneer homes built years ago in many parts of the United States and Canada.

Scenes such as this are comparatively new in Siberia. Until a few hundred years ago, this area was little more than a blank spot on the map. No one knew much about it. Almost no one lived there. Then, Russian traders and soldiers began pushing into the land, attracted by the opportunity of getting furs and of adding territory to Russia. Later, Siberia became a dreaded land of exile for prisoners, many of whom were not criminals but political enemies of the government.

A few farmers sought new homes there, but no one seemed to think that Siberia was a very desirable place to live. Difficulties of travel and transportation were enormous, in those times. The rivers flow the wrong way, northward to the frozen Arctic Ocean instead of westward toward the Atlantic. There were no highways or railroads.

Then about 50 years ago, the Trans-Siberian Railroad was built, reaching from western Russia entirely across Siberia to Vladivostok on the Pacific (pp. 386-387). This helped greatly to open up the country. The Russians dicovered undreamed-of wealth, not only in the forests but in the soil, and in coal, iron, gold, and other minerals.

Soon there was a great flood of pioneer settlement. The population of Siberia increased by more than 15 million persons in less than twenty years. These settlers included miners, farmers, and other workers. Most of the farmers settled along the southern edge of the coniferous forest and, as you would expect, near the Trans-Siberian Railroad. The more northern lands remain "lands of isolation" (pp. 388-389).

This pioneer settlement recalls stories of settlement in middle western United States. There are important differences, however. Nearly all the new settlers in Siberia came from within Russia. The American pioneers were attracted from a dozen or more different countries. The Russian pioneers found land that was usable but not nearly so rich as the lands in the Mississippi Valley. The climate was more of a handicap to farming in Siberia, since nearly all of Siberia is farther north than any part of the United States. Furthermore, the American settlers moved as individuals, choosing pieces of land which became their own property. The Russian farmers, on the frontier as elsewhere, had to become members of collective farms or work on state farms (pp. 106-107).

Building cities. While many thousands of people were moving to the frontier in Siberia, other thousands were moving into the cities of Russia. During the last 20 years the urban centers have grown by leaps and bounds. The largest city is Moscow, the capital, with more than 4 million people. The picture at the right shows one of the busy streets in Moscow.

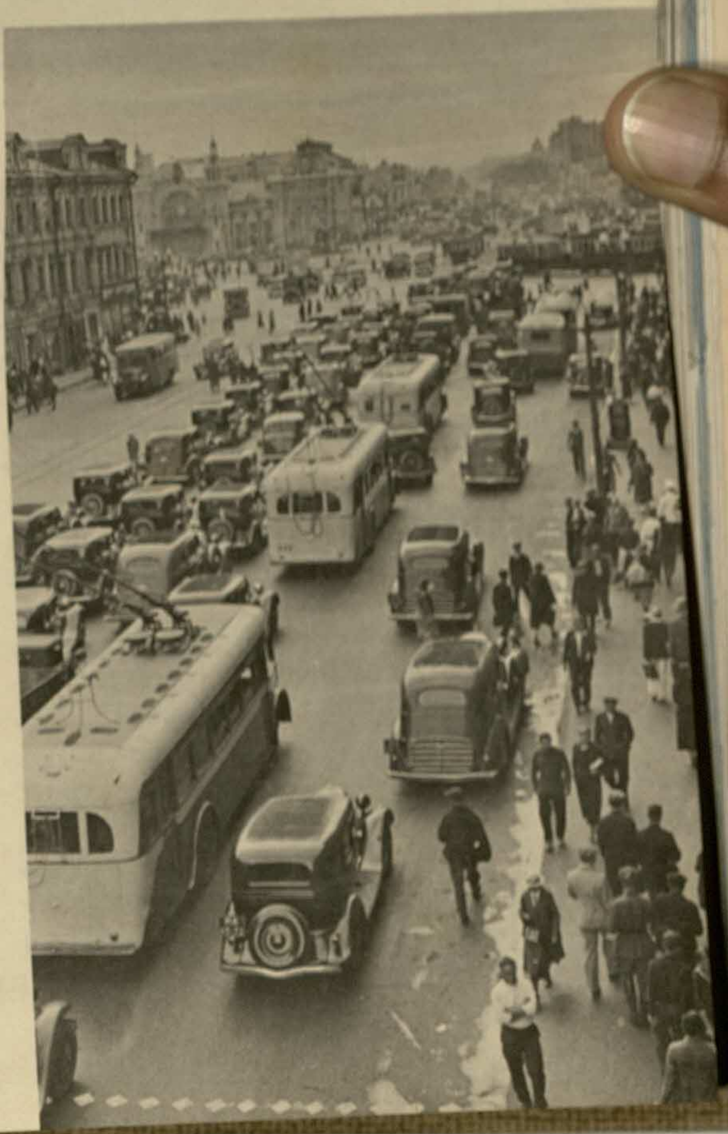
One reason for the rapid growth of cities was the increase in population in Russia. Another reason was the fact that, not until this century, did the Industrial Revolution come to Russia with full force. With the Industrial Revolution came iron and steel mills, great textile mills, and other factories. Literally millions of workers were needed. They flocked to the Russian cities, then, just as other workers had crowded into English and American cities in earlier years.

Some of these cities now are centers of trade and light manufacturing, Moscow and Leningrad, for example (pp. 386-387). Others, such as Magnitogorsk and Stalinsk, are centers of heavy industry. In fact, these last two represent city clusters, where there is much mining as well as manufacturing. Their tall chimneys, smoke-filled skies, and crowded apartment houses resemble somewhat those in the picture on page 312, in the industrial heart of western Europe.

There are remarkable contrasts within the towns and cities of Russia. Those which were untouched by industrialization remain quiet,

Figure 316. A street in Moscow

© Sovfoto



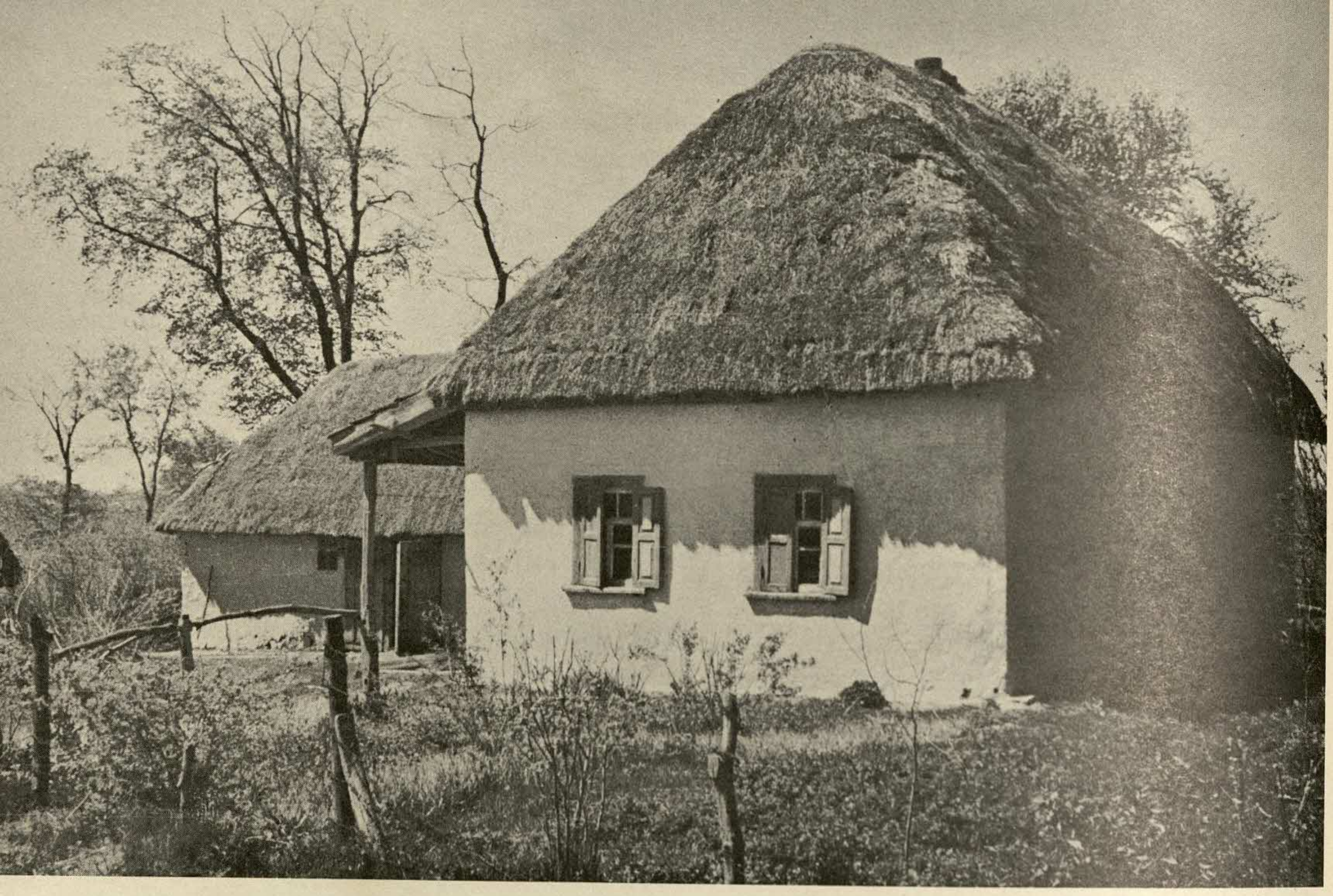


Figure 317. A home in southern Russia

© *Sovfoto*

quaint towns, in which most of the buildings show the styles of old Russia. In other instances, a whole new city may have grown up around a cluster of older buildings. If you look in one direction you may see modern factories, and long, box-like apartment buildings. If you look in another direction, you may see older homes and little shops that represent earlier times, before these great changes came to Russia. Still other Soviet cities are completely new, built out on the open prairies wherever it seemed desirable to have them.

In a great many Russian cities there are some buildings in which the people take special pride—a theater or a government building. In nearly every large city there is, also, some of the frontier atmosphere suggested by the picture on page 328—temporary construction and makeshift buildings. And in spite of all this development in the building of cities, the urban people of Russia are still living under very crowded conditions.

The work of the people. Although the growth in cities has been remarkable, the Soviet Union is still chiefly an agricultural country. About half of the people make their living from agriculture. This means that Russia has a larger per cent of its workers engaged in agriculture than does North Dakota, one of the least industrialized states in the United States (p. 238). The Soviet Union, then, has far to go before it becomes as much of an industrial nation as the United States or Britain.

Russia's foreign trade reflects this pattern of work. Before World War II the leading three exports were grain, lumber, and furs. The chief imports were machines, industrial equipment, and iron and steel. Very little trade was with the United States. In later years there was still less trade between the United States and Russia, partly because of political differences.

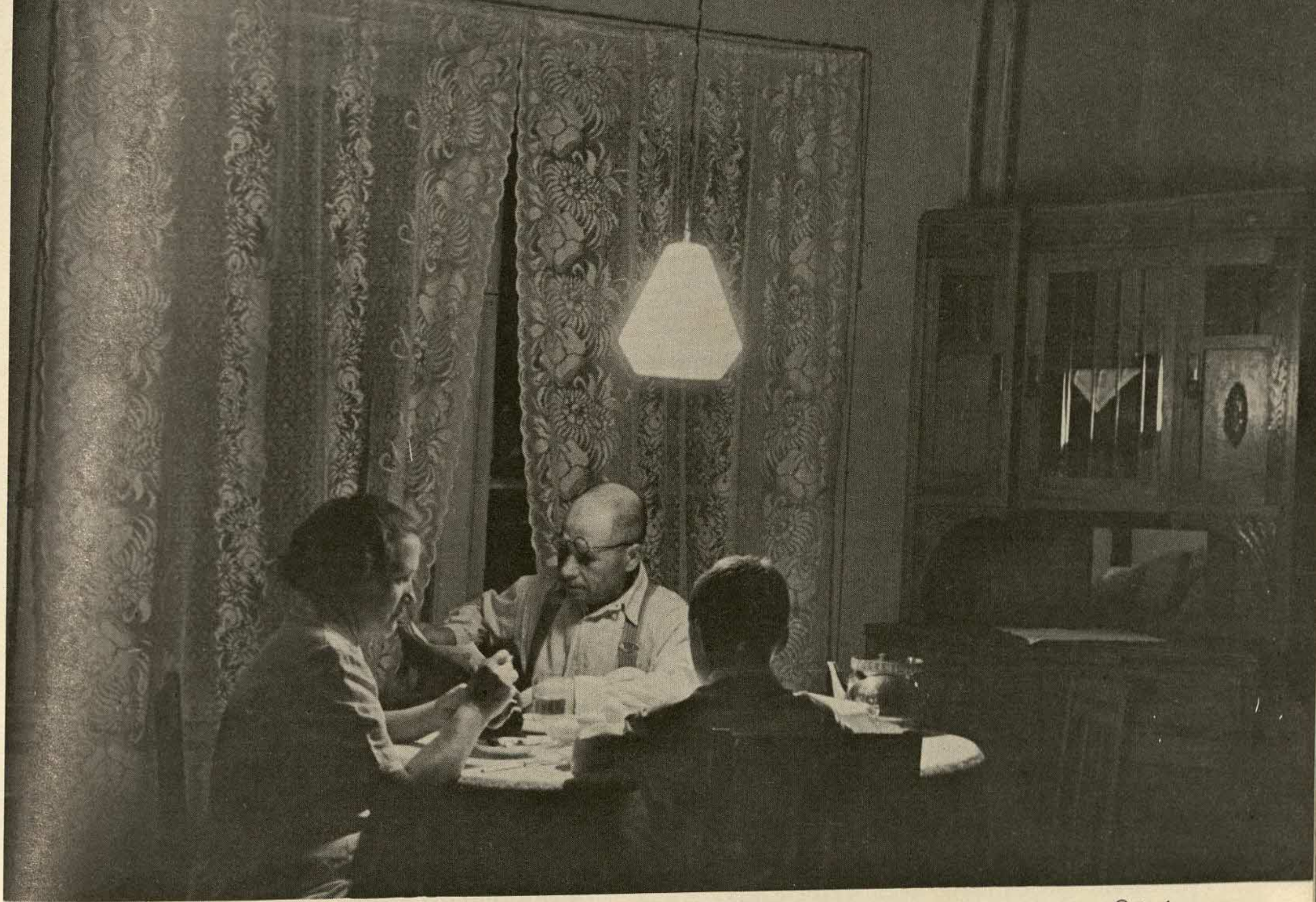


Figure 318. One of the better homes in Russia

© *Sovfoto*

We may ask where the city people, shown on page 329, are going, just as we inquired about those going to work in an American city (p. 163). The answer is not greatly different, though we do not have the same kinds of statistics for Soviet cities that we have for our own. Probably most of these people are engaged in manufacturing. Others are concerned with trade, transportation, and special services.

The homes of the people. The pictures on these facing pages (pp. 330-331) represent two types of homes in Russia. The picture on page 328 stands for another.

The house shown on page 328 is made of logs and rough boards, as you can see. This kind of home is typical in much of the northern half of Russia, from the Baltic Sea to the Pacific. In this vast sweep of land, the forests, which are almost everywhere near at hand, supply materials for building houses. A few of the native peoples, who were living there before the Russian settlers arrived, still use a kind of wigwam made of wooden poles and the skins of animals.

Wood is scarce in much of the southern half of Russia. There, many of the settlers have built the kind of house shown on page 330. It is a whitewashed house made of clay or adobe, and has a thatched roof. This, too, fits the surroundings.

The picture above may be compared with that on page 328. Clearly one family has more of the conveniences that make for comfortable living than the other. One home has electric lights and factory-made furnishings. Electricity is not used in the other home, and much of the furniture is homemade. One reason for these contrasts is a difference in income. The frontier farmer probably gets very little, after the small harvest of the collective farm has been sold. The man shown in the picture above is one of the directors of a large collective farm in western Russia. As you will recall, the income of the various members of the collective farms differs according to the work each one does or the official position which he has.

Helps in Learning

1. "The interests of the United States meet Russian interests on both sides of the world." Using the maps on pages 378 and 379, explain what you think this means.

2. As you have learned, more than half the people of Russia make a living from agriculture. Read again the story of Russian farmers and farm life (pp. 106-108) with this question in mind: How do the people live and make a living on the collective farms?

3. Do you think the farm buildings shown on page 107 are in the far north of Russia, or in the southern part of the country? Why?

4. What contrasts might you find in Russian towns and cities? What facts help to explain these contrasts? Why is there a kind of frontier atmosphere in some of the cities in Russia?

5. Tell some reasons why Russian cities have grown by leaps and bounds in recent years.

Eurasia's Place in the World

The place of Eurasia in the world is changing. Eurasia is a giant land, as shown by the globe picture on the opposite page. For many years, however, it seemed that the world importance of Eurasia was determined by a small part of the continent—the peninsula of western Europe. Western Europe was by far the outstanding area, in power and influence. It is still a leading area, as you have seen. But other lands are becoming important rivals. There is much stirring and ferment in many parts of this vast continent.

The Soviet Union has grown into one of the powerful nations of the world. The eastward march of Russia means that it must be included as a major power in the Far East as well as in the West. The nations of the Orient are becoming aware of the ideas of the West. If they learn to use the tools of the West, they may produce much more, and greatly raise their standards of living. They may also become more influential in world affairs.

The continued spread of the Industrial Revolution helps to explain these new developments. It was this revolution that did much to establish the leadership of western Europe in manufacturing, trade, transportation, and military power. Now the Industrial Revolution has come with full force to Russia, and is rapidly changing the way of life in certain areas of the Far East. The rise of Japan, as a modern industrial nation, suggests developments which may take place in other Oriental nations in the future. Changes may come rapidly because in our modern world ideas can spread swiftly.

In a shrinking world, all Eurasia, of course, is of greatly increased importance to the United States. A war beginning in Eurasia could quickly sweep the world. An epidemic of disease could do likewise, since now travelers go back and forth in days instead of weeks. But good things also move rapidly from continent to continent. What someone learns in Asia may be highly valuable to us, as our knowledge is to them. And their prosperity may well help to maintain our prosperity.

In a word, then, we cannot avoid influencing, and being influenced by, this new Eurasia. That is why an understanding view of Eurasia is so important.

Helps in Learning

1. You can use the statistics near the top of page 396 to compare Eurasia—the giant—with North America, where we live.

First, do the necessary addition to find the area and the population of Eurasia. Then, compare the area of Eurasia with the area of North America. About how much bigger is Eurasia?

You can draw two squares to represent the approximate areas of Eurasia and North America. Make the first square about 2 inches on each side. Make the second square about 3 inches on each side.

Which square should be labeled EURASIA? Which should be labeled NORTH AMERICA?

You can put dots in your squares to represent the population of North America and of Eurasia. Let one dot stand for 10 million people. About how many dots should you put in the square for North America? In the square for Eurasia?

According to your graph, are people crowded closer together in North America, or in Eurasia?

Write a short paragraph telling, in words, the facts shown by your graph.

2. On page 398, find the graph which shows the largest twelve cities in the world. How many of these cities are in North America? How many are in Eurasia?

3. According to the population map on pages 370-371, most of the enormous population of Eurasia is crowded into three areas. What are these three areas?

4. These three areas also stand out boldly on many of the other maps which you have used. For example, what does the map of urban areas (pp. 160-161) show about Europe, India-Pakistan, and China-Japan?

What does the transportation map (pp. 388-389) show about these three areas? What does the map of cultivated lands show (pp. 384-385)?

5. Find these three areas on the map of Eurasia on pages 280-281. According to this map, what kind of work is outstanding in all three areas?

What other kinds of work are important in Europe? In India-Pakistan? In China-Japan?

What can people do for a living in the vast, nearly empty spaces of Eurasia?

6. *A class project—getting understanding views of Eurasia.* The class may be divided into small groups, each of which may choose one of the following journeys:

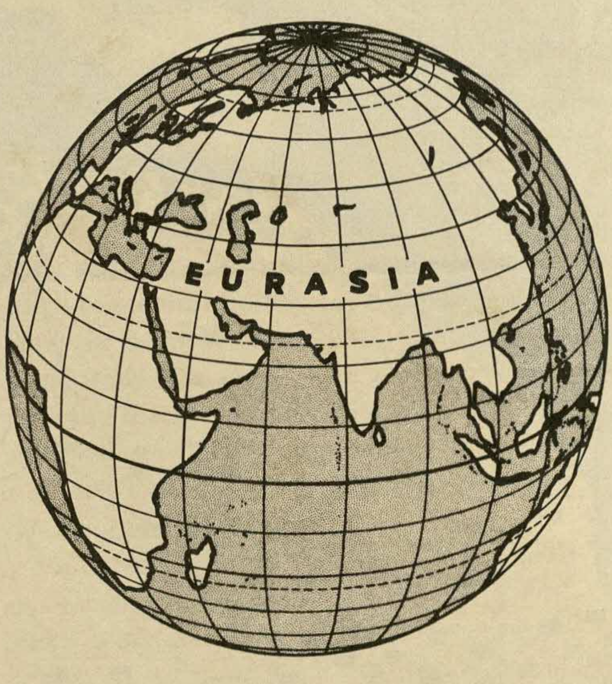


Figure 319. Eurasia on the globe

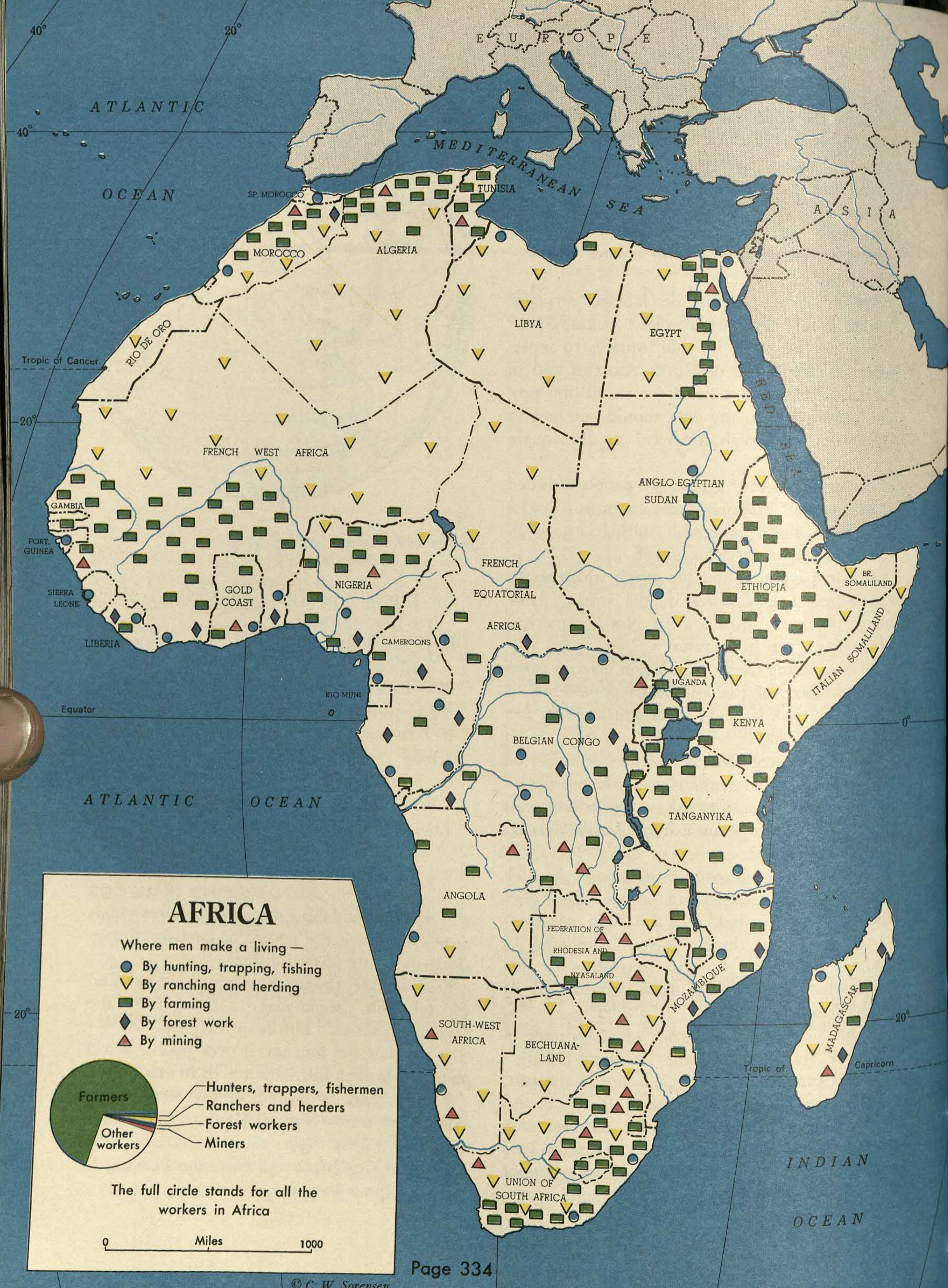
By railroad from Calcutta to Delhi to Bombay (pp. 386-387)
By Trans-Siberian Railroad from Moscow to Vladivostok (pp. 386-387)
By railroad and boat from Sheffield to London to Antwerp to Essen (p. 394)
By boat down the Yangtze Kiang from Chungking to Shanghai (pp. 386-387)
By boat along the Mediterranean coasts of Europe and Asia (pp. 386-387)

The point of each journey will be for the "travelers" to be able to tell what they "saw" along the way.

In order to do this, each group of travelers will need to study those maps and pictures which show facts about the people or land or climate along the route of the journey.

For example, the maps on pages 280-281 and 300 tell how people make a living from the natural resources. The map on pages 380-381 tells whether the journey is over plains, across plateaus, through hilly country, or in mountains.

Pictures may be found in the sections entitled "Five Great Natural Resources and How Men Use Them" (pp. 28-150), "A Living in Town and City" (pp. 152-224), and "Living in Eurasia," (pp. 280-333).


AFRICA
Where men make a living —
● By hunting, trapping, fishing
▼ By ranching and herding
🟩 By farming
◆ By forest work
▲ By mining
Farmers
Other workers
Hunters, trappers, fishermen
Ranchers and herders
Forest workers
Miners
The full circle stands for all the workers in Africa
Miles
0
1000
E U R O P E
A S I A
ATLANTIC OCEAN
MEDITERRANEAN SEA
RED SEA
ATLANTIC OCEAN
INDIAN OCEAN
SP. MOROCCO
TUNISIA
MOROCCO
ALGERIA
LIBYA
EGYPT
RIO DE ORO
FRENCH WEST AFRICA
ANGLO-EGYPTIAN SUDAN
GAMBIA
PORT. GUINEA
SIERRA LEONE
LIBERIA
GOLD COAST
NIGERIA
CAMEROONS
RIO MUNI
FRENCH EQUATORIAL AFRICA
ETHIOPIA
BR. SOMALILAND
ITALIAN SOMALILAND
UGANDA
KENYA
BELGIAN CONGO
TANGANYIKA
ANGOLA
FEDERATION OF RHODESIA AND NYASALAND
MOZAMBIQUE
MADAGASCAR
SOUTH-WEST AFRICA
BECHUANA-LAND
UNION OF SOUTH AFRICA
Tropic of Cancer
Equator
Tropic of Capricorn
40°
20°
0°
20°

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LIVING IN AFRICA

The natural foundations. The equator cuts squarely through the heart of Africa. Although every inhabited continent has some tropical lands, each of the others reaches farther from the equator than does Africa. In Africa there is no really cold winter weather except in a few of the higher mountains (pp. 374-377).

The deserts, more than anything else, divide Africa into separate regions. There are no mountain ranges that compare in height or extent with those of South America or Eurasia. Africa is largely a land of plains and plateaus (pp. 380-381). But the Sahara is as great a barrier as most mountain ranges. As the rainfall map shows (pp. 372-373), this dry land almost fills northern Africa, shutting off Europe and the Mediterranean lands from central Africa. The location of this desert helps to explain why the peoples of Egypt and of Europe remained ignorant of the peoples of central Africa for so long. The Kalahari Desert of southwestern Africa (pp. 372-373, 390) is much smaller than the Sahara, both in size and importance.

Between the Sahara and the Kalahari Desert are the equatorial lands. In the hot lowlands facing the Atlantic, forests cover nearly all the land, as you can see by the map at the top of page 127. On the slightly cooler plateau land of eastern Africa (p. 390), there is much less forest cover. This plateau land reaches on to the tip of southern Africa. There, outside the tropics, the weather is somewhat cooler in winter than in equatorial Africa.

Using natural resources. The map on the opposite page shows how closely man's work follows the pattern of the land and the distribution of natural resources. The two desert areas stand out almost exclusively as lands of ranching and herding. The Nile makes possible the Egyptian farming oasis, and rainfall helps to account for the narrow strip of farm lands in northwestern Africa. In the equatorial lowlands there is a combination of farming, forest work, and hunting, trapping, and fishing. On the eastern plateau we find a different combination, chiefly farming and ranching and herding.

Southern Africa has resources in farm lands and grasslands somewhat like eastern Africa, plus a truly enormous supply of mineral resources (p. 148). On the map on page 334, there are more than a dozen red triangles in a single group, reaching from the Belgian Congo to the Union of South Africa. In all the rest of the continent there are scarcely half as many.

Figure 321. A new machine in an old land

From photo by Three Lions

← Figure 320

In Africa, as in all lands, the natural resources change slowly, yet the way man uses them may change rapidly. This fact is suggested by the picture on page 335. It shows a well on a ranch in South Africa. As far back in time as anyone knows, the livestock in that area had depended on ponds and streams for water. Now a gasoline engine pumps all the water they need.

Helps in Learning

1. What kinds of work would you expect to see if you traveled across Africa from west to east, along the equator?

2. How do Libya and Egypt differ in the way men use the natural resources?

3. Are the highlands of Africa chiefly plateau lands or mountain lands (pp. 380-381)? Which are used more for farming, the plateau lands or lowlands? Find one important area of lowland farming in Africa.

4. Is any part of Africa as far north of the equator as your home? How can you tell?

5. Use the graphs and statistics on pages 396-400 to find the information you need for the following questions and exercises.

Is Africa larger, or smaller, than North America? How much difference is there?

To get a vivid impression of the size of various African countries, compare their areas with areas in the United States. For example, find the area of the Belgian Congo. Then list a group of states in the United States which together have about the same area.

Village, Town, and City

The great majority of workers in Africa are rural people, who make a living directly from the natural resources. You can tell this by the graph on the map of Africa (p. 334)

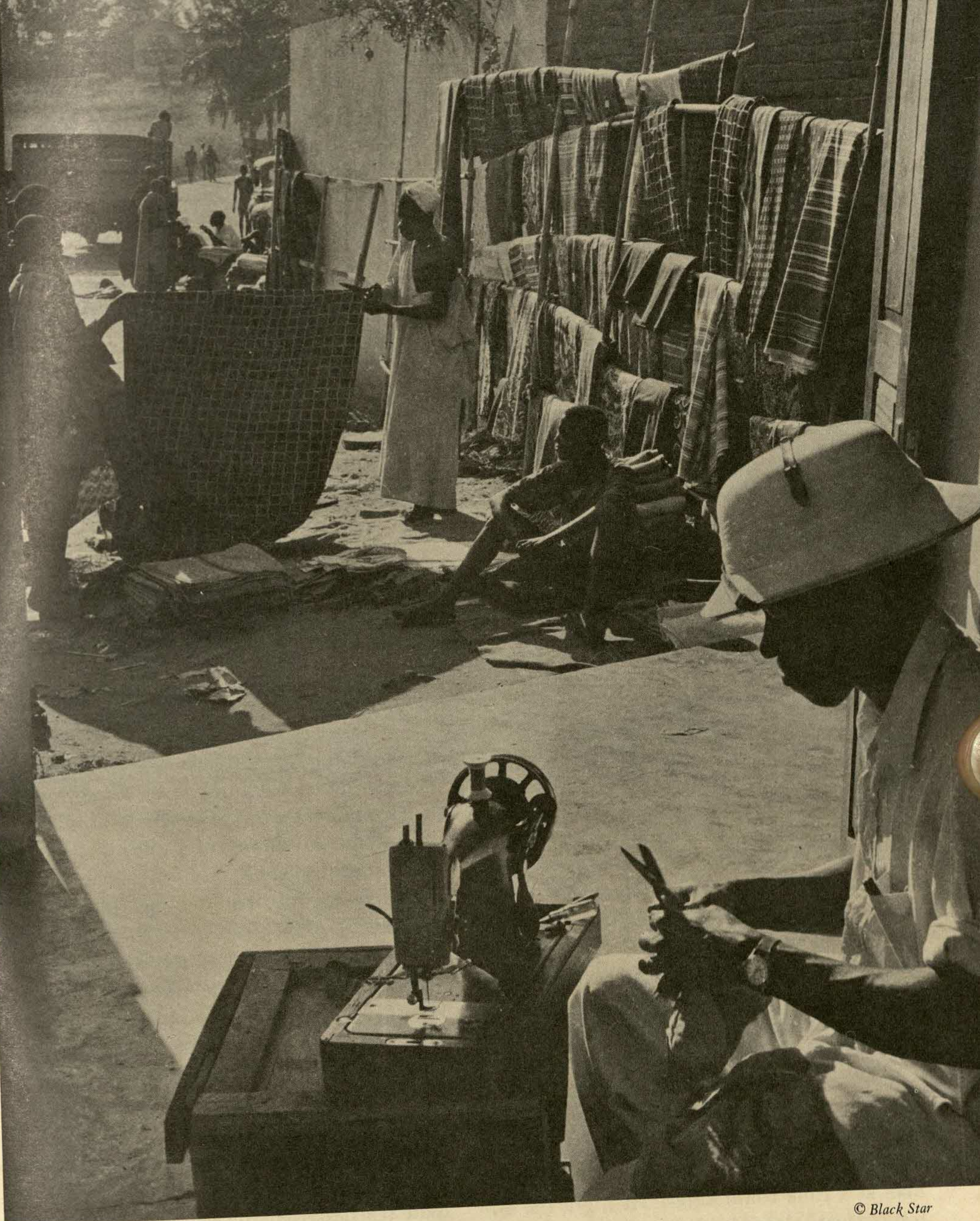
The map of urban areas tells a similar story about Africa (pp. 160-161). On this map there is a mere sprinkling of dots in three or four areas near the coasts. Notice how many more urban centers there are in North America, which has about the same total population as Africa. In both instances, of course, the map shows only the urban areas of 100,000 population or more. Africa has a number of cities of smaller size, yet not nearly so many of these, either, as North America.

Life in the villages. In Africa, as in Asia, nearly all the rural people live in villages, large or small, and not in isolated homes. You have read about some of these villages, and have seen pictures of several of them, for example, on pages 32, 118, and 119. Looking ahead to pages 339 and 342, you can see other small African villages.

These villages are in many ways like thousands of other villages in Africa. In most of the villages, people are partly subsistence workers, partly commercial. In every village there is some community organization, however simple. Commonly there is a headman, or local chief, who has considerable authority. A village may also include some tradesmen, and perhaps a witch doctor. Rarely is there a school teacher. Most of the workers go out from the settlement to their fields or pastures or to the sea, as the case may be.

Urban life and work. The picture on page 337 was taken in a town in the Belgian Congo. The photographer stood at the back of a small shop, looking out through the wide door at the front. The shopkeeper is the man sitting at the sewing machine. The workers just outside the door are cutting cloth in pieces to be sold. The shopkeeper sews hems where the cloth was cut. He may also be a tailor in a small way, making a suit occasionally. The cloth on the racks is for sale.

This scene is rather typical of most towns in Africa. The work is done on a small scale. A few modern inventions have come into use. The sewing machine, for example, can now be found in practically every town in the world. There is a truck in the road near the shop. The shopkeeper wears a wrist watch, and a style of hat and clothing that is foreign to most African people. Yet the old ways of living and working continue beside the new.



© Black Star

Figure 322. A familiar scene in African towns

The man who is cutting cloth, outside the door, wears the older style of clothing. Men carry loads on their heads along the highway which the truck uses.

The cities of Africa display the same sharp contrasts. Some are modern cities—for example, Cairo, Cape Town, Alexandria, Algiers, Durban. A scene in the modern city of Johannesburg is shown in the picture on page 343. In each of these modern cities, there is also a so-called native section, which resembles somewhat the smaller towns. And in the continent as a whole, most urban centers are almost entirely native cities, where people have been slow in replacing old things with new.

Kano, a native city in Nigeria. An excellent example of a native city is Kano, in northern Nigeria (p. 390). The check list for studying cities (pp. 162-163), will help you in understanding Kano.

Natural setting. The map on page 390 shows that Kano is a tropical city, inland from the coast about 500 miles. It lies in a kind of park land, between the dense forests to the south and the Sahara to the north (p. 118). The 36 inches of average annual rainfall is concentrated in the summer months, from May to November. The so-called winters are warm and dry.

Surrounding Kano is a wide area of productive soil, from which farmers take large crops, chiefly of guinea corn, millet, and peanuts. There also are extensive grazing lands, particularly to the north (p. 334).

Size. Kano has a population of nearly 100,000. The number is not always the same, since as many as 25,000 extra people may live in the city briefly during the harvest season.

History and people. This is one of the oldest cities in Africa. It is known with certainty to be at least 1000 years old and may be much older. All this time it has been a center of trade.

For centuries Kano has been enclosed by a moat and a mud wall, 20 or more feet in height. Until recently the entrances through the walls were so narrow that only one horseman at a time could enter. At night the entrances were closed by doors, made by stretching cowhide over wooden frames. Now the entrances are wide enough for automobiles, and the walls are gradually washing away.

Almost the entire population of Kano is composed of various groups of native Africans. It was trade that brought them into the city—some from the east, others from the desert land to the north, some from the west and south. There are only a few hundred Europeans in the city.

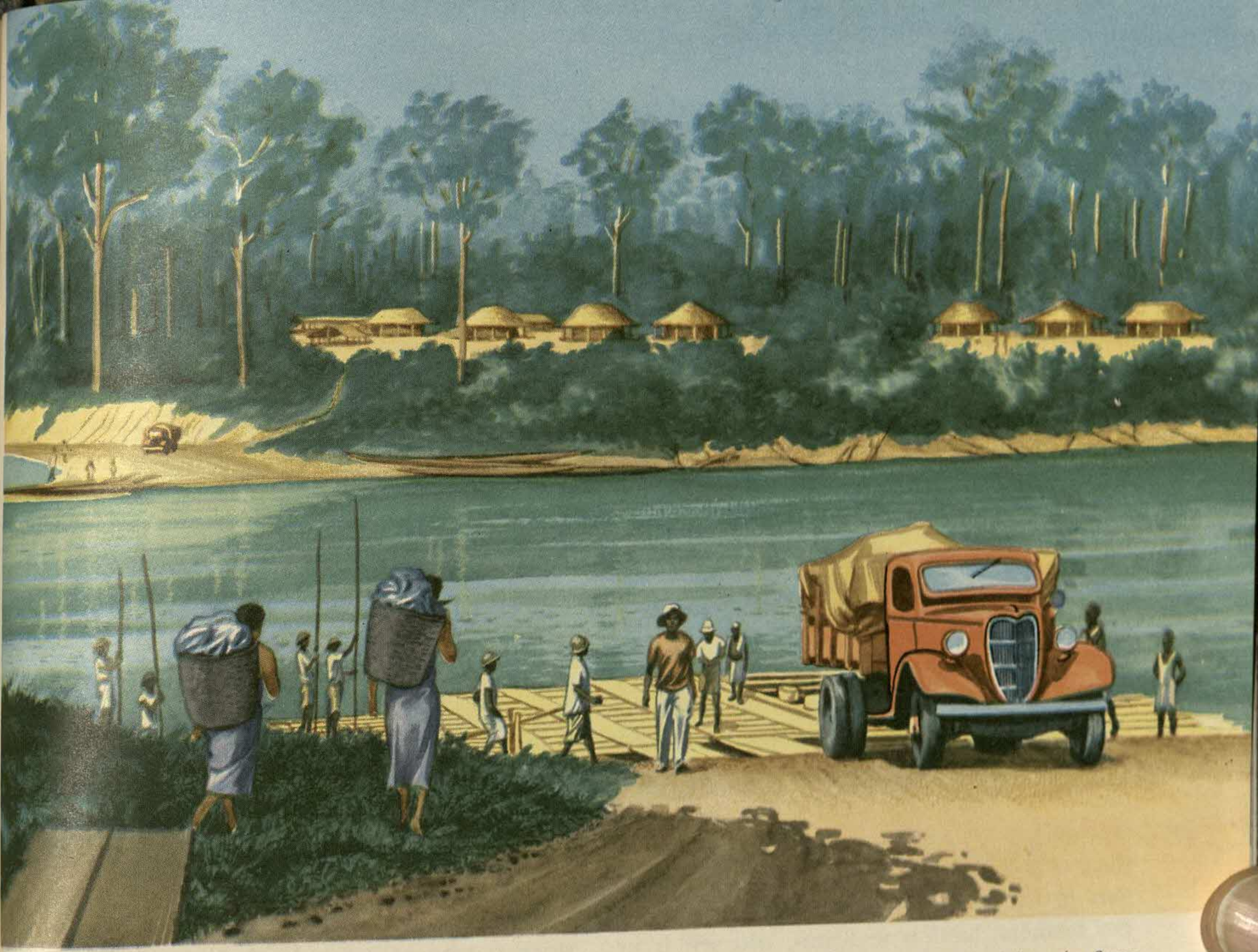
Streets and buildings. Many of the streets in Kano are the same width as they were hundreds of years ago. A few new streets have been cut through the city allowing for automobile traffic. The others are narrow and frequently crowded. At one time in such a street, you may see donkeys, camels, horses, automobiles, bicycles, oxen, sheep, goats, and people. Nothing could better suggest the mingling of the old and the new. This is common in places such as Kano, where the products of the modern world of science and industry are not yet widely used.

Nearly every house in Kano is made of sun-baked mud, mixed with straw. The roofs are almost flat. People like to sit on these roofs in the evening, or sleep there during the dry season, since it is cooler there, at night, than inside the house. After each rainy season there is much patching to be done, for rain is hard on roofs and walls made of mud.

Recently a cluster of buildings has been built outside the old city wall. This is called Kano Township, and belongs to the Kano urban area. Europeans live in this new section, which has wider streets and more modern buildings than the old city. In Kano Township, many public buildings are built of concrete, and have corrugated metal roofs.

Connections. The old trails and caravan routes are still much used today, reaching out in every direction. A few good highways have now been added, and travel by bus is becoming more and more popular. A railroad reaches from the coast to Kano, and a short distance beyond (p. 390).

The rivers in the forests to the south present great difficulties to land transportation. In many places, cars and trucks must be ferried across the streams, as shown in the picture on the next page. This picture shows a



From photo by Belgian Information Center

Figure 323. Where bridges are scarce

river crossing in the Belgian Congo, but the problem is the same in most of the rainy lowlands of tropical Africa.

Fortunately for Kano, it has become a crossroads for air traffic in Africa, as you can see by looking at the map on page 379. A century ago Kano was several weeks from the coast in travel time. It was at least two months from London. Now, by air, Kano and London are less than a day apart.

Work. For centuries, Kano has been famous for its manufacture of coarse cotton cloth. Some of the raw cotton is grown on near-by farms. The making of the cloth little resembles the kind of work shown in the picture on page 170. It is much more like the work shown in the picture at the top of page 164, except that in Kano men rather than women seem to do all the work with cloth. They spin the yarn, and weave the cloth by hand. They embroider some of it, and sew various garments on sewing machines, as shown on page 337.

Kano is widely known for its leather, particularly "morocco leather" made from goatskins. Leather is made also from sheepskins, and the skins of camels, cattle, and donkeys.

Kano has other simple workshop manufacturing, such as the making of simple tools, saddles, furniture, and food. Cattle are slaughtered in Kano, and throughout the city you can see thin strips of beef hung on stalks of guinea corn to dry in the sun.

The chief work of Kano undoubtedly is trade and transportation. It is a great collecting center for products of the grasslands and farm lands over a wide area. It also is a great distributing center both for imported goods and goods made locally.

Camel caravans bring hides and skins distances of 500 miles or more, from places as far away as Lake Chad (p. 390). Other loads are brought by trucks, oxen, or donkeys. The surplus hides and skins are baled and shipped by rail to Lagos, the capital, for export (p. 390). Cattle are also shipped to Lagos, for use as food in the capital city.

The outstanding cash crop in the area is peanuts. Daily, during the harvest season, many trains of donkeys from near-by farms, and camels from more distant places, arrive with loads of peanuts.

Several thousand workers live in thickly settled suburbs, which crowd around the Kano urban area. Many of these workers combine a little farming with trade or transportation. A man and a donkey can earn several dollars a week, carrying various loads in the city and bringing firewood and farm products to the city. Some men buy corn from the farmers, haul it to Kano, and sell it in the public markets.

The public markets are the chief centers of native trade. In appearance they resemble somewhat the open-air markets of southeastern Asia. In these markets, the people of Kano can buy almost everything they need.

Kano has a few very large trading establishments, which combine the buying of raw materials with wholesale and retail trade. Besides having big stores in Kano, these establishments have branch stores throughout the surrounding area, selling imported European goods and buying local products. Clerks travel from farm to farm, granting loans on growing crops of peanuts and buying the crops when they are harvested.

The number of workers in special services in Kano is much smaller than in a city of 100,000 in the United States or Europe. Yet there are workers in hotels, repair shops, the post office, and government offices. Each section of the city has its own headman. There are soldiers, money lenders, maintenance men at the airport, lawyers, and translators. Kano has several small schools, a hospital, and a veterinary center where cattle are cared for.

Surpluses and Needs

A large part of the things produced in Africa are used by the workers and their families or traded in the local markets. To produce great surpluses for export, modern tools, large-scale organization, and good transportation are needed, as well as natural resources and workers. As you have seen, Africa in general does not meet all the conditions necessary for producing exports in as great quantities as some other continents. Yet in the case of certain minerals, Africa's contribution to the world's supply is great.

From ocean, forest, ranch, and farm. Many workers make a living by hunting, trapping, or fishing; yet all of these workers together do not produce much for export. Forest workers who gather palm kernels and make palm oil contribute some of their products to world trade.

Ranchers and herders export some wool, hides, and skins. The story of Kano shows how hides and skins from areas of subsistence herding move into the streams of foreign trade.

The millions of farmers in Africa use up nearly all that they produce, except for a few products from certain areas. The farm exports include corn from southern Africa, peanuts and cacao from western Africa, wine, fruit, and grain from Algeria, cotton and foodstuffs from Egypt, and cotton, coffee, and sisal from eastern Africa.

Products of the mines. The African miners as a group are few (graph, p. 334). Yet they produce far more for export than any other group of workers of the same number in the continent. Many of the mines are equipped with modern machinery, are served by ade-

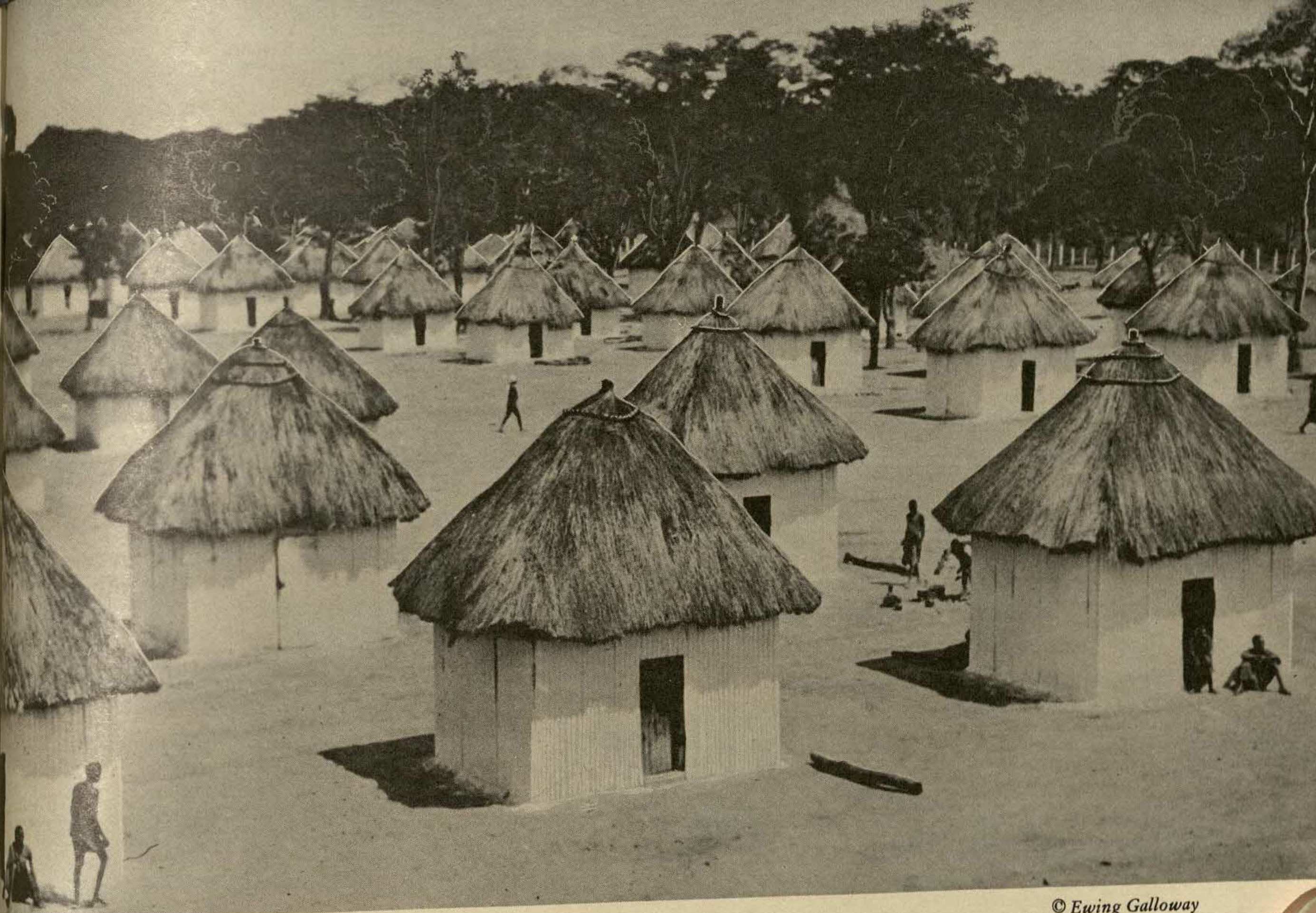


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Figure 324. A town for miners

quate transportation, and are organized and directed efficiently.

The picture above shows a modern mining camp in Africa. One can tell that it is not an ordinary village, because the houses are so evenly spaced, each is made exactly like the next one, and the walls appear to be of metal rather than of reeds or adobe. The miners have come to this camp from widely separated places. Their home tribes may be a hundred miles or more away.

Gold is by far the leading mineral product of Africa. And, as you have seen (p. 334), southern Africa is the great mining center of the continent. Besides gold, Africa has diamonds, silver, tin, manganese, and large deposits of copper. It is poor in coal, petroleum, and iron ore, which are considered essential to modern industry.

To the coast, and overseas. As one might expect, the best railway network is in southern Africa, serving the mining area. Highways also carry a share of the freight of the continent, particularly in the desert lands of the north. Few products for export are carried by airplane.

Africa has a number of great rivers, such as the Nile, the Congo, the Zambezi and the Niger (p. 390). As transportation routes, the first three of these are greatly handicapped by waterfalls, where the streams drop from one level of the plateau to another. At most times of the year the Niger is too shallow for large boats to go far upstream.

As in the case of South America (p. 271), the ocean is the chief highway connecting most sections of Africa. Many areas in the interior are without good transportation (pp. 388-389).

Filling needs from the outside world. In every part of Africa the imports are amazingly similar. Probably four-fifths of all im-

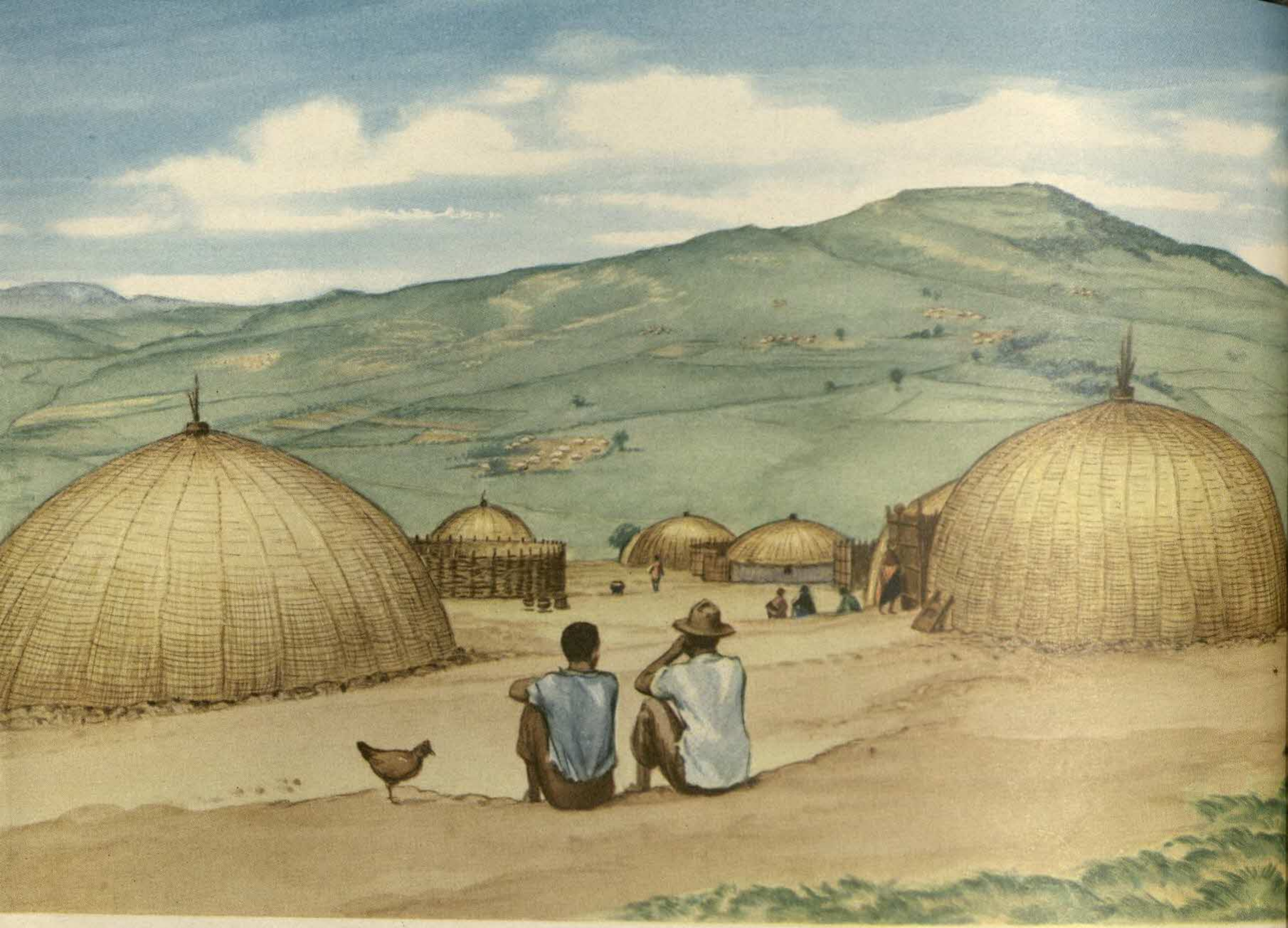


Figure 325. In rural Africa

From photo by Three Lions

ports are in two classes, cloth and machinery. The word machinery, in this case, means automobiles, bicycles, wheelbarrows, mining equipment, freight cars, simple tools, and a multitude of other things, small and large, that we might not think of as machinery.

Different Civilizations

How it came about. The pictures on these two pages illustrate an essential fact about Africa. It is a continent of different civilizations existing, in many cases, almost side by side. There is the civilization of so-called Arab Africa, which extends across most of northern Africa and resembles the civilization of southwestern Asia (p. 299). The picture above stands for the civilization which has grown up slowly south of the Sahara in Negro Africa for many hundreds of years. The picture on page 343 stands for European civilization which in recent times has been transplanted to many parts of Africa.

The civilization of Negro Africa, south of the Sahara, developed in almost complete isolation. This part of Africa was a mysterious land of legend until about a century ago. Within it were millions of people with their own kings and kingdoms, their own laws and customs. Only a few slave traders, and an occasional adventurous explorer went more than a few miles from the coast.

Then Europeans suddenly took note of Africa. A great scramble for African territory began, involving Britain, France, Spain, Portugal, and later, Germany and Italy. Native kingdoms were destroyed. Nearly all Africa was divided into European colonies.

Today, there are four independent countries in Africa—Liberia, Ethiopia, Egypt, and Libya, in addition to the Union of South Africa, which is an independent nation within the Commonwealth of Nations.

Life in Africa has changed. It was impossible for the native Negro civilization to remain entirely as it was, after people from Europe came, including government officials, traders, missionaries, settlers. In some places the Europeans set up entirely new systems of government, ruling the people directly. Elsewhere, particularly in British territory, there was much indirect rule; that is, the European officials influenced the local tribal chiefs, but upheld their authority with their tribes. In both cases there were many changes, such as new taxes, and new laws.

The Europeans brought new farm tools and weapons. The natives were eager to get these things. Plows did better work than hoes. Guns were more efficient than spears.

The work that people did changed somewhat with the coming of the Europeans. Native ironwork and leather work declined. Some new occupations were created. Now there are native clerks, interpreters, policemen, teachers, nurses, tailors, and dressmakers.

To begin with, missionaries took the lead in education, establishing elementary schools in hundreds of isolated places. Government schools also were set up. The picture on page 344 shows a teacher with a group of school children in an African town. You can imagine the changes that schools have brought to such towns. Unfortunately there still are comparatively few schools, and most people cannot read or write (pp. 392-393).

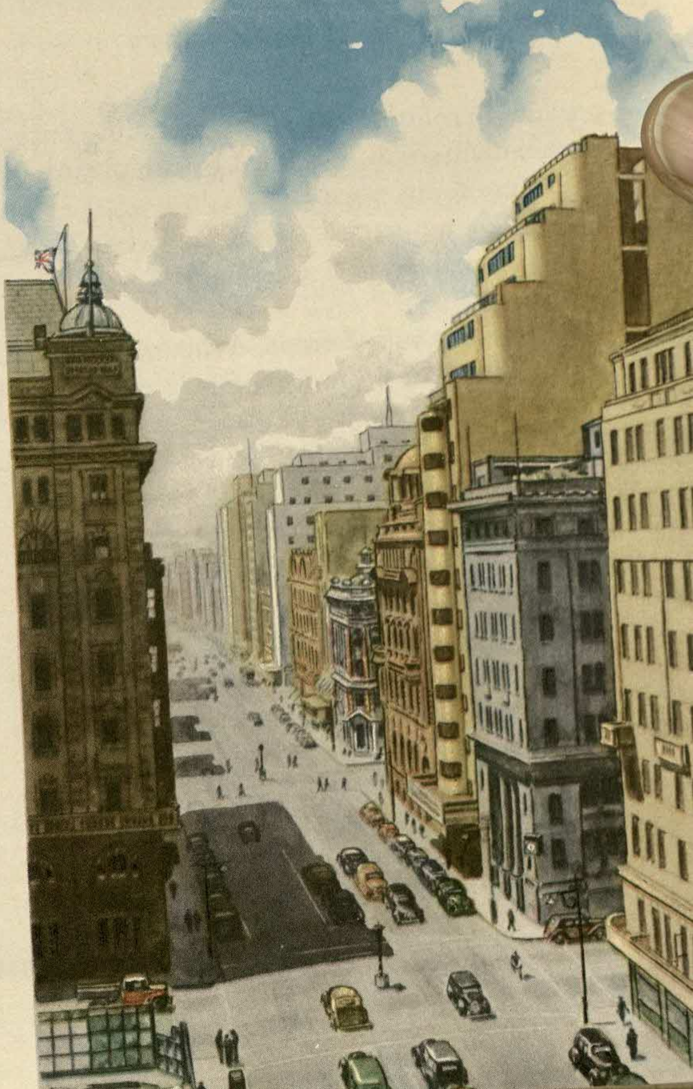
When the Europeans came, nearly all the Africans, south of the Sahara, were members of tribes, living in rural areas. The picture on page 342 suggests this tribal life. The entire group of villages is under the leadership of one chief. In many instances, the land is jointly owned and used.

Working for wages was a new idea to the tribal people. Now thousands of them have jobs on plantations and in the mines. Many have gone to the cities to work. There they wear European style clothing, and use European style furniture. In time they may lose contact with their home tribes.

A new African civilization, then, has developed, south of the Sahara. It takes for granted many of the changes described in the preceding paragraphs. Yet it remains a tribal civilization on the whole, for most of the people still live in tribal groups. They still cling to many old traditions. For example, many millions today rely on witch doctors rather than on physicians. Even the urban workers have not abandoned all tribal customs.

This new Negro African civilization, though different from that of the past, still

Figure 326. In Johannesburg
From photo by Union of South Africa Government Information Office



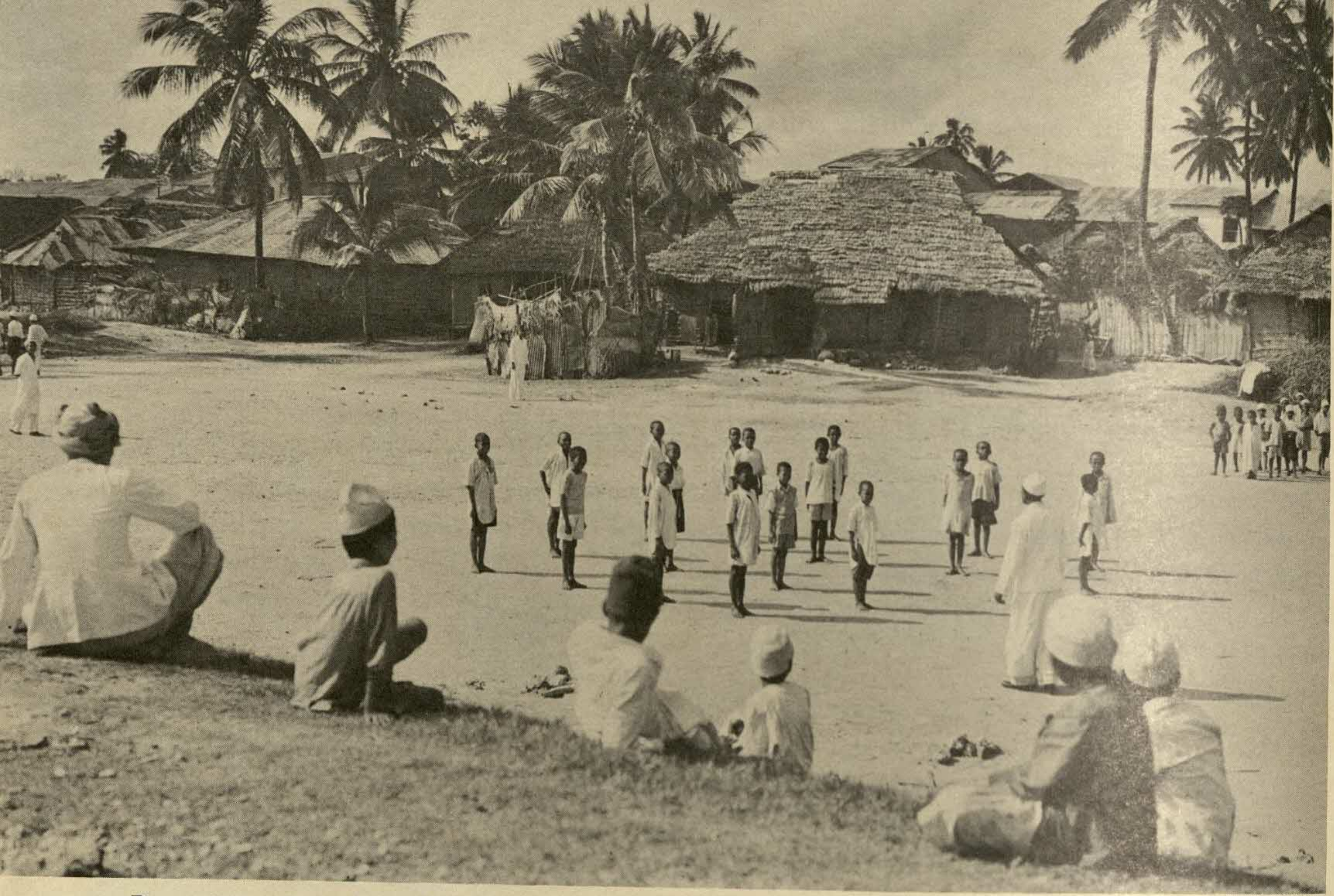


Figure 327. A good sign for the future

© *Ewing Galloway*

stands in contrast with the transplanted European civilization illustrated by the picture of Johannesburg, page 343.

Africa and the World

Close ties with Europe. When the African people look at the world outside their continent, they look first to Europe. As the globe map shows (p. 345), Europe is very small by comparison with Africa. Nevertheless, most of Africa is under the control of European nations. Almost all Africa's trade is with Europe. The chief ocean routes and air routes lead to Europe (pp. 378, 379). Probably to most Africans the United States seems a remote land, of no great concern to them directly.

Following the pattern you saw in southeastern Asia, many Africans look forward to more self-government. In this they have made considerable progress. The Union of South Africa is a fully self-governing dominion within the Commonwealth of Nations (p. 263). When there are schools in every community like the one shown above, there undoubtedly will be more progress in government and in many other things.

New industry? Some people dream of making Africa a highly industrialized continent. But Africa, so far, lacks several of the six essentials to manufacturing described on pages 166-167. There are abundant raw materials and an ample labor supply which could be trained. But there is no large local market, because most of the people cannot afford to buy much. Transportation facilities in general are poor. And Africa is seriously lacking in fuels, such as coal or petroleum, to use for power. There are enormous possibilities in water power, but its development has scarcely begun. Local capital is lacking; probably foreign capital would be available, if the other needs for industry were met.

Further settlement? Africa is one of the more thinly settled lands, as you can see from the map on pages 370-371. So far only a small fraction of its soil has been cultivated (pp. 384-385). What then are the possibilities for further settlement in the continent? Many people in Europe and Asia would like an answer to this question.

There are large areas on the plateau lands of eastern Africa where the climate is satisfactory for European settlement. Oriental people could live in any part of Africa. But any new settlement means taking land away from some African people. It is true that they may not be using it as well as some others might, but it is theirs. In the past this problem has caused great difficulty, for the native peoples could not easily compete with the newcomers from Europe. Perhaps the leaders in new settlement can find a way to make it possible for both the present inhabitants and future settlers to prosper.

Helps in Learning

1. Look again at the pictures showing different kinds of villages in Africa. What suggests that the people are largely subsistence workers?

2. Which pictures in this chapter show old and new ways of living, existing side by side? What does this suggest about Africa as a whole?

3. Use the story of workers in Kano to illustrate the fact that different groups of workers in a city are interdependent.

4. Use the map on page 334 to explain why you would expect to find more cattle near Kano than near Lagos.

5. The exports from Algeria indicate that farming in that area greatly resembles farming in southern Europe. Explain (pp. 103-104, 117).

6. How do the exports and imports of Africa differ from those of the United States (pp. 253, 256)? How do you explain this difference?

7. By far the greatest importer of machinery in Africa is the Union of South Africa. Why should you expect it to need much more machinery than Angola, for example? Give at least two reasons.

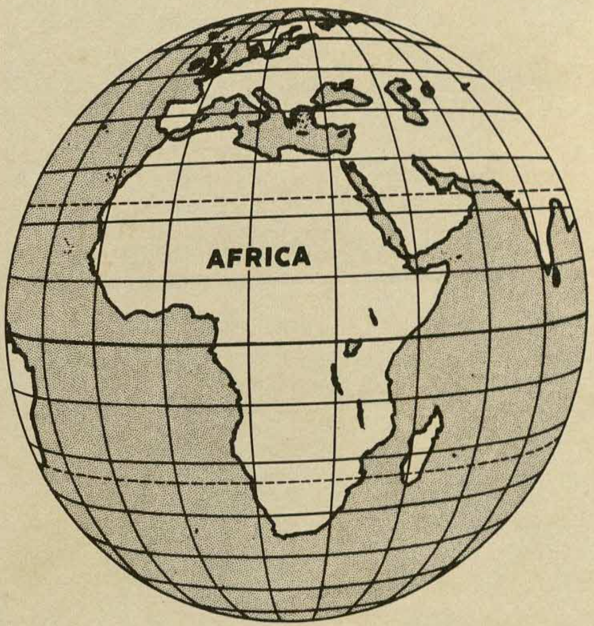


Figure 328. Africa on the globe

8. Describe a country or colony in Africa, telling what it is like, its work, where its chief cities are, and so on. See whether others in the class can guess its name.

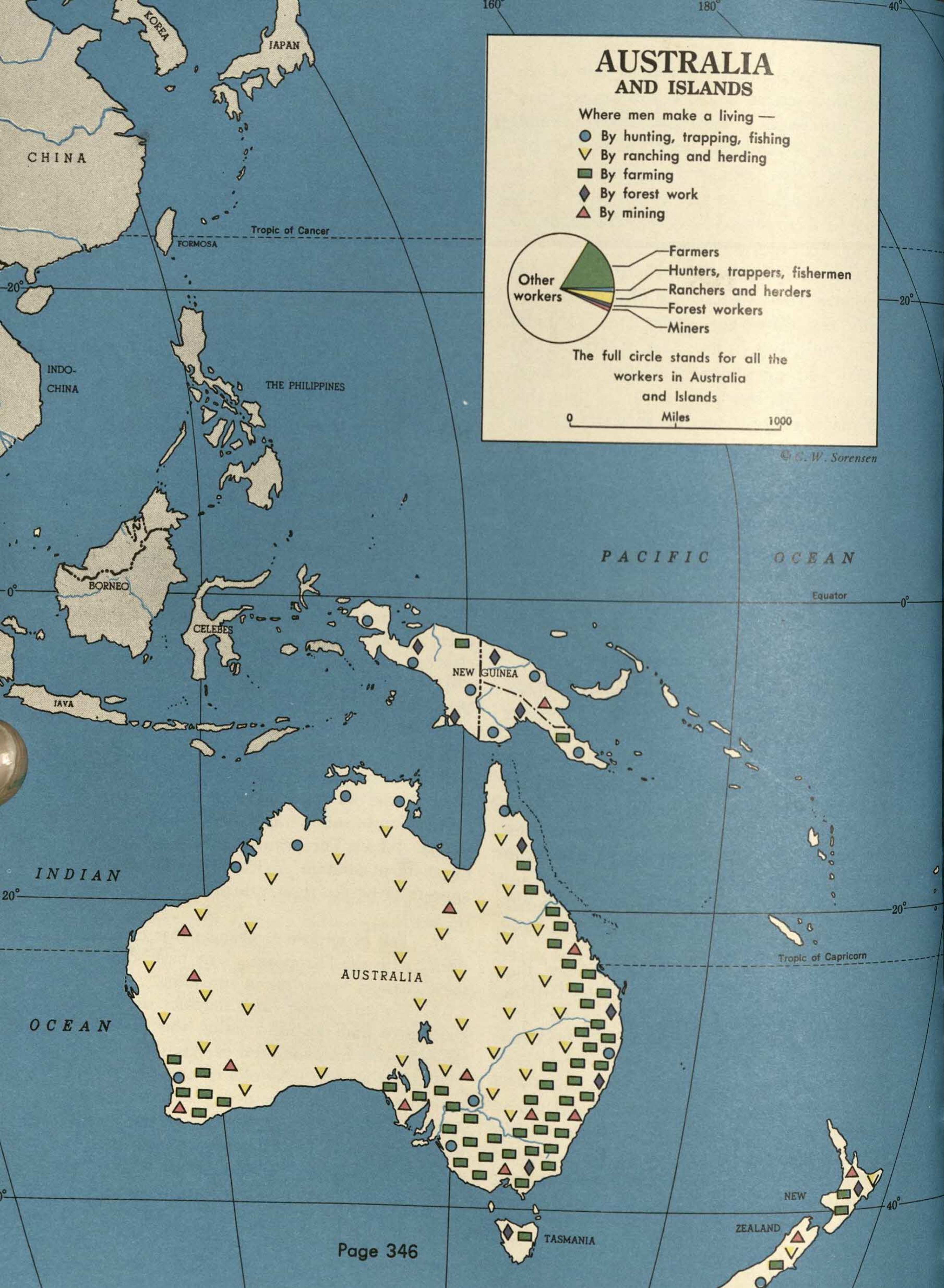
9. "Africa is a land of different civilizations." What do you think this means?

10. Make five separate small outline maps of Africa. On one map color the lands that belong to Britain, on another the French lands. Similarly, on the other maps, show Portuguese lands, Spanish lands, and the independent countries of Africa. Which European country has the largest share of land in Africa? Which has what appears to be the most valuable share of land (p. 334)?

11. Tell of important changes that came to Africa with the Europeans. Why have some of these changes been slow in spreading?

12. Use the graphs and statistics on pages 396-400 to find the information you need for the following questions and exercises.

Would you expect Nigeria to be more thinly settled, or more thickly settled, than Canada and Australia? Compare the population of Nigeria with other parts of the British Empire, for example, Canada and Australia. What surprising results do you find?


AUSTRALIA
AND ISLANDS
Where men make a living —
● By hunting, trapping, fishing
▼ By ranching and herding
▬ By farming
◆ By forest work
▲ By mining
Other workers
Farmers
Hunters, trappers, fishermen
Ranchers and herders
Forest workers
Miners
The full circle stands for all the workers in Australia and Islands
0
Miles
1000
© C. W. Sorensen
KOREA
JAPAN
CHINA
Tropic of Cancer
FORMOSA
INDO-CHINA
THE PHILIPPINES
BORNEO
CELEBES
JAVA
NEW GUINEA
PACIFIC OCEAN
Equator
INDIAN OCEAN
AUSTRALIA
Tropic of Capricorn
TASMANIA
NEW ZEALAND
160°
180°
40°
20°
0°

LIVING IN AUSTRALIA AND NEW ZEALAND

Europeans in new lands. Australia was the last of the inhabited continents to be discovered and settled by Europeans. A small part of the coast of Australia was discovered shortly after 1600. More than 150 years passed, however, before the first European settlers arrived. In 1788 a small group settled at Sydney (p. 391). The first settlement in New Zealand was still later. As you can see, the United States was already an independent country before any Europeans made their homes in Australia and New Zealand.

These southern lands were almost uninhabited when the white men arrived. In Australia there were a few dark-skinned people who lived much as men did back in the Stone Age. They had no livestock and knew nothing of agriculture. In a simple way, they collected roots, berries, and shellfish for food.

A far more advanced people, called the Maoris, lived in New Zealand. They tilled the soil, built excellent boats, and, in general, had a more advanced civilization. Frequently there was trouble between the white settlers and these brown-skinned Maoris, chiefly because of disputes over land. For many years, however, the two groups have lived peacefully together. Many of the Maoris are now prosperous farmers.

Today, nearly all the people of Australia and New Zealand are British born, or of British descent. Only a few native people remain, and only a few immigrants have come from lands other than Britain.

Some of the Oriental people who live in the crowded lands northwest of Australia look eagerly at these new lands, still thinly settled. Australia is about as large as the United States but has about the same number of people as New York City (pp. 396, 399). It is the policy of the Australian government, however, not to admit immigrants from the Orient. The Australians fear that large scale immigration from those lands would result in lower standards of living, since Australian workers probably could not compete successfully with the newcomers.

Australia on the maps. You can learn much about Australia from the maps in this book, even without the written text and the pictures. It is a very thinly settled land, almost blank on the population map (pp. 370-371). The people rank high in literacy (pp. 392-393). They have built many cities, particularly along the southeastern coast (p. 391). A network of railroads reaches some distance inland from these cities. One line reaches westward across the continent to Perth. But most of Australia is a "land of isolation," not served by any major transportation routes (pp. 388-389). Both ocean routes and air routes connect the chief cities of Australia with the rest of the world (pp. 378, 379).

The vast interior of Australia is a dry land. Largely for this reason, Australia has little cultivated land. As you can see by the map on the opposite page, farming is concentrated along the southeastern coast and in the southwestern corner. These areas are regions of heavier rainfall (pp. 372-373). The great dry interior is used for grazing, or is not used at all. The forests and forest work also follow the pattern of rainfall (pp. 127, 346).

As you have learned, the seasons in Australia are the opposite of those in lands north of the equator. In January, hot weather spreads over nearly all the continent (pp. 374-375). In July, the weather is hot only in areas near the equator (pp. 376-377). In that midwinter month, most of the continent is warm, not hot, and some areas are cool.

← Figure 329

Using the same maps, you can discover how various island neighbors of Australia differ from the continent. Look particularly at New Zealand, Tasmania, and New Guinea. What differences do you see? What similarities? This again calls attention to the value of using map tools in getting a view of the world.

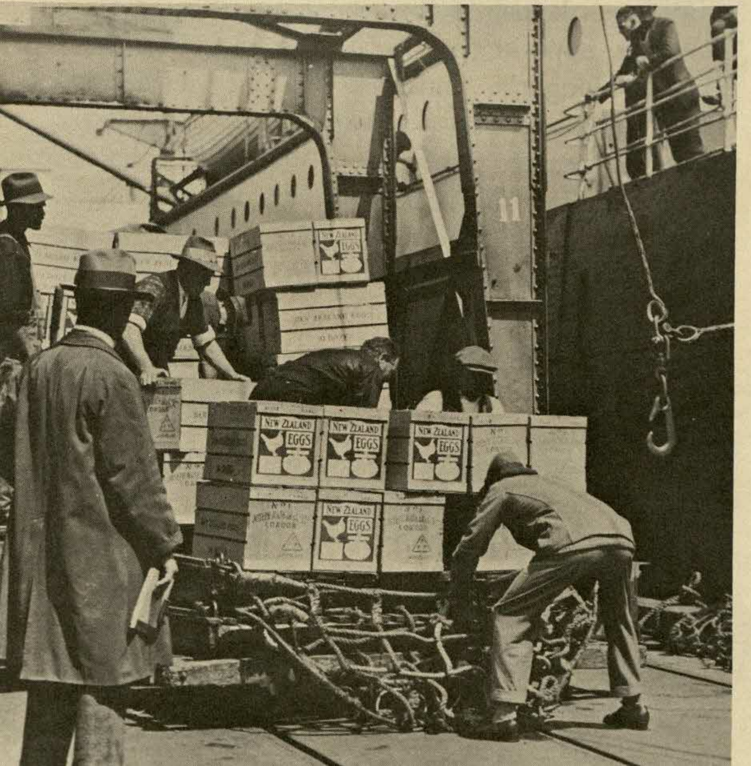
At work in Australia and New Zealand. The graph on the map on page 346 shows an amazing fact about the workers who make a living directly from natural resources. All these workers account for not more than one-third of the total in Australia and near-by islands. Two-thirds of the workers live in towns and cities, and make a living from manufacturing, trade, transportation, and various special services. *Nearly half the total population of Australia may be found in six cities.*

The demand for food in the cities is great, of course. But with modern machinery a comparatively few farmers can produce enough to support many city people.

Littledene, a town in New Zealand. The story of one community will illustrate the pattern of life that is found in most of the smaller towns of Australia and New Zealand. There are local differences, and many of them. But the way of life is remarkably similar throughout these new lands, where most of the settlers came from one country, Britain, and where people take pride in preserving many of the British traditions.

Figure 330. Starting for Britain

Courtesy New Zealand Legation



Littledene is a community in South Island, New Zealand (p. 391). It began about 100 years ago as a saw-mill settlement. When the timber was cleared away, the forest workers moved on, and farmers moved in. Today the population is about 2000. Many of the people are dairy farmers and sheep farmers. Others are townspeople.

It takes only a few minutes to walk around the business district of the town. The chief place of business is called a stock agency. It is a combination bank and store. The agency lends money to the farmers, helps market some of their products, and offers for sale almost everything a farmer may want to buy —clothing, shoes, groceries, machinery, gasoline, and fertilizer.

Everyone in Littledene knows the postmaster, the policeman, the "schoolmaster," the school teachers, the clergymen, and the doctor. There is an excellent small hospital. Also in Littledene there are 3 blacksmith shops, a garage, 2 threshing mills, 2 hotels, 2 butchers, 2 grocers, a tailor, 2 bootmakers, a painter and paperhanger, and 3 carpenters.

Education is an important part of community life. Some years ago, four small schools were closed and a new central school was built. Buses carry the farm children to and from the school. Many of the pupils correspond regularly with children in other countries, particularly in the United States. During the winter months there are classes for adults in a wide variety of subjects.

Nearly all the houses are one-story, wooden buildings. Many have electric lights, and nearly all have telephones and radios. Few have furnaces or indoor bathrooms. In most instances, the kitchen is large, and may be used almost as a living room. During the winter, the "front-room," or living room, is heated only on special occasions.

Nearly everyone in Littledene belongs to a church. There also are other organizations, including a Farmers' Union, a football club, a bowling club, a tennis club, and a golf club.

Littledene, then, is an example of the modern way of life common to the smaller settlements in Australia and New Zealand. As you can see, there are many resemblances between this community and small towns in the United States, as well as in Britain.

Big cities. Almost any one of a half dozen cities might be chosen as representative of the larger urban communities. There is Wellington, for example, the capital of New Zealand (p. 391). In Australia you might choose Sydney, Melbourne, Adelaide, or Perth. All of these are modern cities. Look at almost any large city in our country, and you will have a good idea of what these cities in Australia and New Zealand are like.

In Australia and New Zealand, every city having a population of more than 100,000 is a port city (p. 391). Much of the heavy freight moving from city to city is carried in ocean ships.

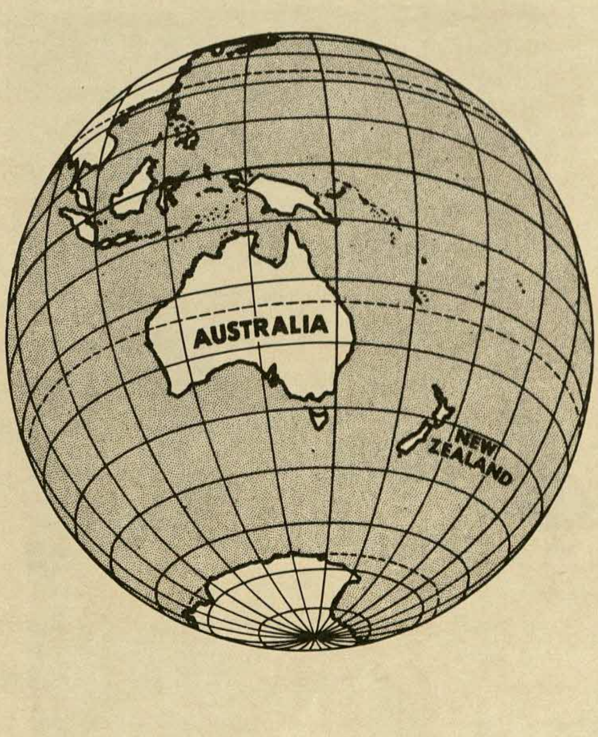
World ties. Both Australia and New Zealand are self-governing countries within the Commonwealth of Nations. This gives them close political ties with such lands as India, South Africa, Canada, and, of course, Britain. Australia also has its own so-called colonial territory, part of the huge undeveloped island of New Guinea (p. 391). New Zealand has a number of small island dependencies in the Pacific. Each has claims in Antarctica.

The picture on page 348 suggests trade ties. Men are loading eggs into a ship which will sail to Britain. The trade of Australia and New Zealand is chiefly with Britain. Wool and wheat are Australia's great exports, recalling the stories of ranching and farming in that continent (pp. 47-48, 121). New Zealand is somewhat more of a farming country (p. 121). Among its exports are butter, meat, wool, cheese, and other products, including eggs. The chief imports of both countries include automobiles, machinery, cloth, and petroleum.

Helps in Learning

1. Tell of ways in which Australia and New Zealand resemble the United States. Tell of ways in which they differ from the United States.
2. Why would you expect New Zealand to be cooler than most of Australia?
3. Using the atlas maps and the graphs and statistics (pp. 396-400), find how New Zealand compares in size and population with your state.
4. Why would you expect Britain to be a good market for the products of Australia and New Zealand?
5. Does Littledene, in New Zealand, remind you of any small American community which you know well? If so, how?
6. Figure 331 shows how Australia and New Zealand look on the globe. How does their location help to explain why they were unknown to Europeans for a long time? Using the classroom globe, find out which is nearer Sydney, Australia—San Francisco, New York, or London. Which is farthest away?

Figure 331. Australia and New Zealand on the globe



THE CONTINENT OF ANTARCTICA

A continent without people. If a map, like the one on page 346, were drawn of Antarctica, there would be no symbols showing the use of natural resources. For, as you know, this continent has no inhabitants. People have visited the continent, but no one lives there permanently.

Antarctica is a vast land, about twice the size of the United States (p. 396). Much of it is a high plateau, covered with great masses of snow and ice. There also are bold mountain ranges in Antarctica.

Resources for the future? The picture below shows the camp of explorers in the mountains of Anarctica, 250 miles inland from their main base on the coast. These explorers were part of an international expedition sent to Antarctica a few years ago by Britain, Norway, and Sweden.

Explorers have discovered some surprising things in Antarctica. In one area they have seen lakes that are not frozen, though surrounded by huge masses of ice and snow. They have located vast deposits of coal. It is believed that other minerals may be found in the continent—petroleum perhaps, or uranium, the essential mineral for atomic power. But so far no one has done any mining in Antarctica. The use of its natural resources belongs to the future, not to the present.

Conflicting claims. The explorers of many nations have visited Antarctica, and claimed parts of it. Claims have been made by the United States, Britain, Australia, New Zealand, Norway, Argentina, Chile, and France. Many of the claims are over-lapping. No one knows when, or how, they will be settled.

The globe picture shows how Antarctica is located, between Africa, Australia, and South America.

Figure 332. Explorers in Antarctica

Courtesy Norwegian Polar Institute

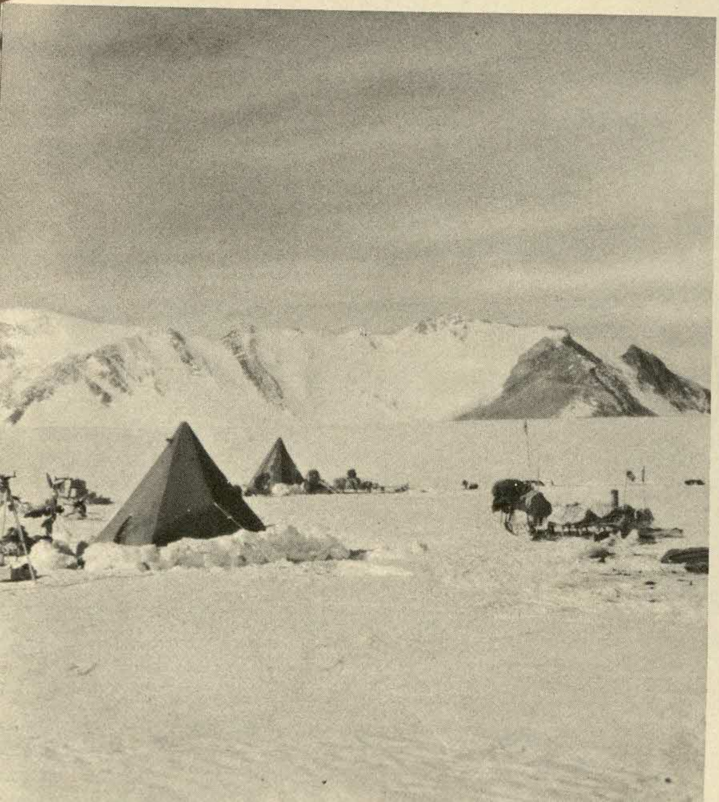
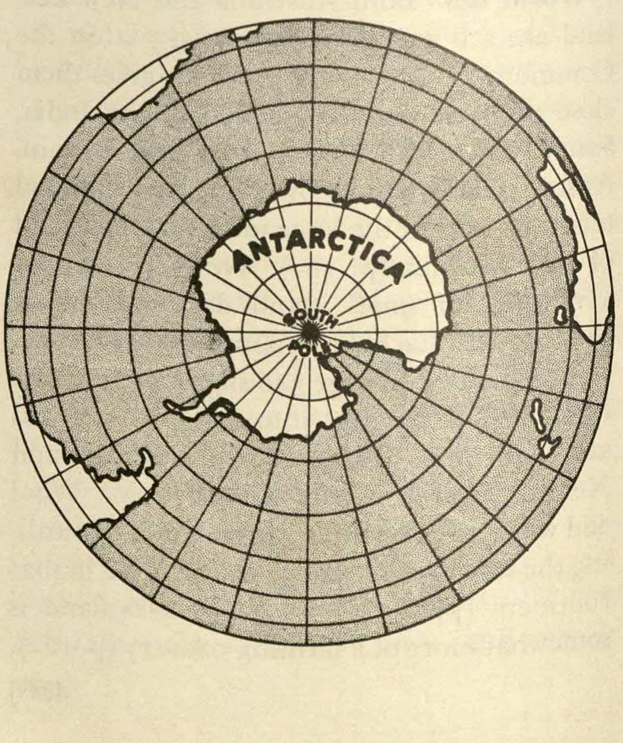


Figure 333. Antarctica on the globe



What It Means to All of Us

Now that you have almost completed your study of A World View, you have discovered two very important ideas. You have found that the life of the world depends on natural resources. You have come to see that all people, everywhere, are interdependent.

Unfortunately, natural resources are still being wasted, in spite of man's critical need of them. There is need for more wisdom and greater unselfishness in the use of natural resources. There is need for definite plans to conserve resources which cannot be replaced, and to restore those which can be replaced.

Unfortunately, too, not everyone understands all the ways in which people are dependent on each other. We are much more dependent than we realize upon education, that is, upon using what others have learned. No great invention or discovery is ever the work of one man. The person who gets the credit for the invention has usually taken what others have learned or done, and gone one step further. Ways of living have been changed greatly because men have learned new ways of using natural resources, and what one generation learns is passed on to the next. In this way, too, we are dependent on the work of others.

There is still another kind of interdependence, which most of us take entirely for granted and which it is not safe to take for granted. We depend on the fact that we live in an orderly society, on the fact that we have government and laws to protect us. We can live as we do today not only because men have learned to use resources more wisely, and to use power and machines more skillfully, but also because of the tireless effort of many men over many centuries to learn how to govern themselves.

We have benefited especially from the long effort to set up a kind of government which will protect people without interfering too much with their liberties and privileges. This kind of government must always depend upon the wisdom and cooperation of the people who make up a nation. The kind of cooperation, then, that makes possible a safe and orderly society is another part of the foundation of our civilization and perhaps the most important part.

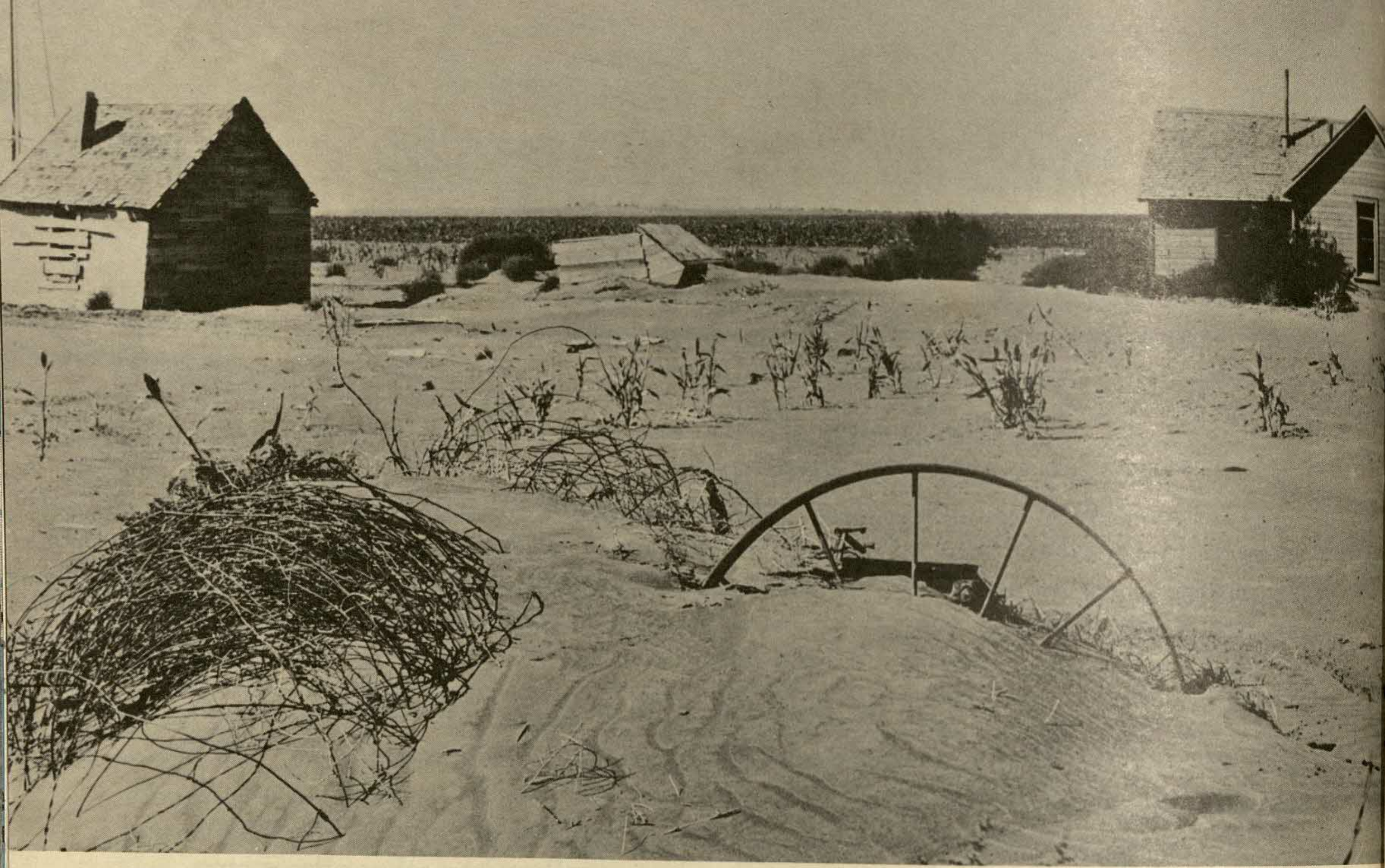
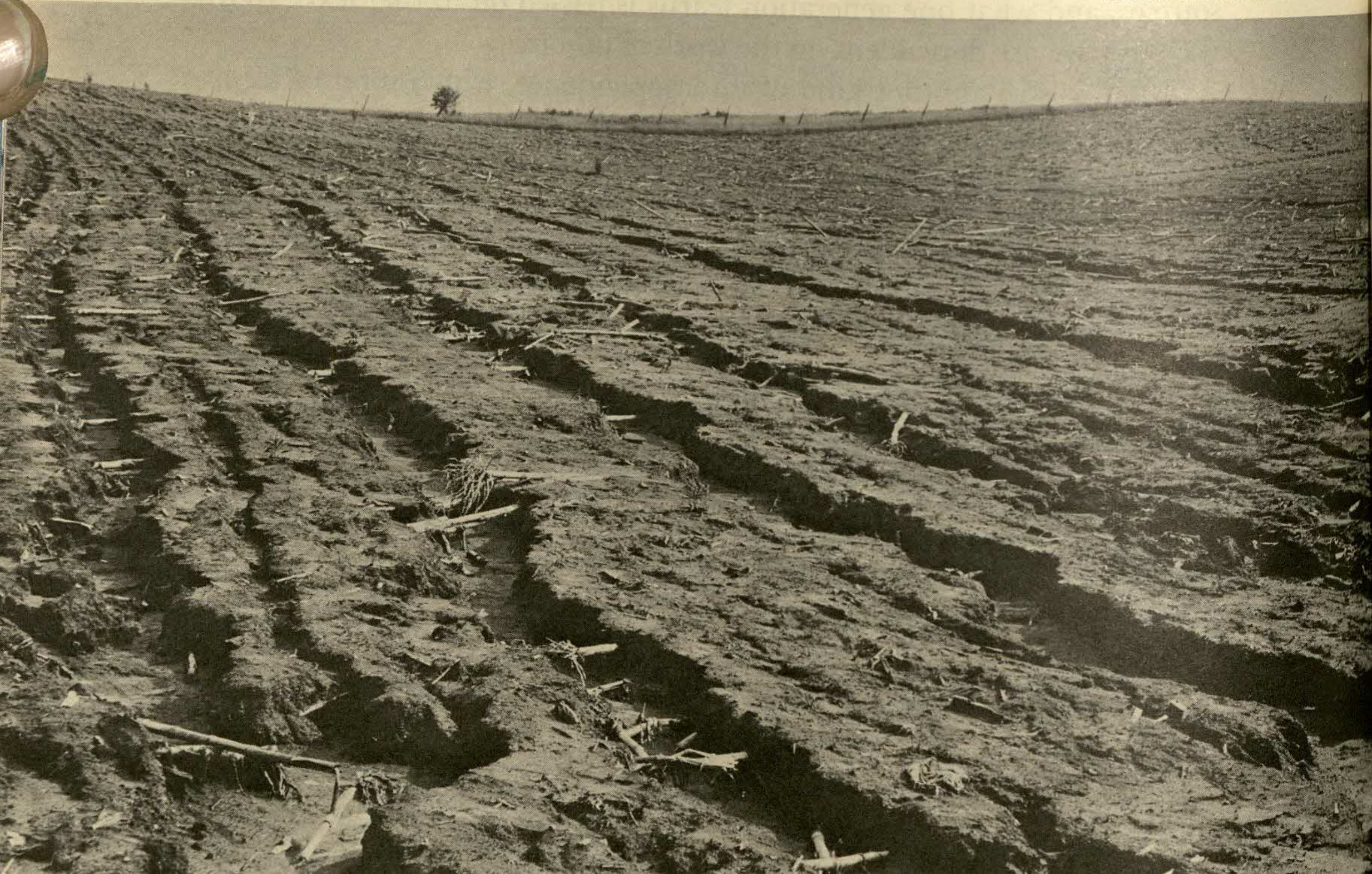


Figure 334. Damaged by wind and drought

© Gendreau

Figure 335. Damaged by running water

Soil Conservation Service



CONSERVATION OF NATURAL RESOURCES

There are four outstanding facts about the natural resources of the earth.

Natural resources are the basis for all human life. Many natural resources have been wasted or used unwisely. The problem of waste or unwise use of natural resources is a world *problem. Something can be done about it.*

Natural resources, the basis for life. As long as people live on the earth, they must live *from* the earth. From the earth, directly or indirectly, man gets everything he eats and everything he wears, the house he lives in, and the tools that he uses. You have seen many illustrations of this dependence on natural resources, while studying this book. You can see other illustrations of it in your own community, wherever you live.

Air, water, soil, grasslands, animal life, forests, and minerals—these are the chief resources that nature has provided for man's use (p. 23). Some people make a living working directly with these gifts of nature. Those who do not work directly with the natural resources are nevertheless dependent upon them.

Wrong use of the soil. The pictures on the opposite page are more powerful than any words in telling us that something is wrong. There is nothing new about the work of the wind, or of water flowing downhill. The hills, mountains, plains, and plateaus of our earth were shaped in part by the work of wind and water. These forces carry small particles of material from one place to another, thus wearing down the high lands and building up the low lands. Normally this work of nature goes on very slowly. It goes on even where the ground is covered with vegetation.

The wind has been blowing for countless years over the land shown in the upper picture, in dry years and wet years alike. Through the centuries it did little damage, for a thick mat of grass covered the ground, and grass roots reached into the ground, protecting the soil.

Then came man. By careless use of the land he permitted the normal processes of nature to get out of control. He plowed the ground and tried to grow crops on soil which was more suitable for growing grass than for growing corn or cotton. By plowing, he removed the protecting cover over the soil, and the crops he planted did not protect the soil as the grass did. Then came a year drier than usual, and "black blizzards" swept across the plains. The wind carried away precious soil by the thousands of tons. It drifted across roads and fences like snow. In the picture it has almost covered a farm machine. The farmhouse is now empty. The farm has been abandoned. One of the natural resources on which the farmer had depended is so badly damaged that it no longer can support him and his family.

The picture at the bottom of the page tells a similar story about damage by running water. For centuries the rains have fallen here. For centuries the water flowed slowly down the gentle slopes, without destroying the land, for it was covered with natural grasses. Then men plowed the land. They failed to cultivate the soil in such a way that the slope would hold the water that the soil needed. They failed to provide a protective cover. The result is only too clear. The irregular ditches show where water now races down the slopes, carrying away the rich soil. A field that was rich became poor. It is estimated that *this field lost more than 100 tons of soil per acre in a single year.*

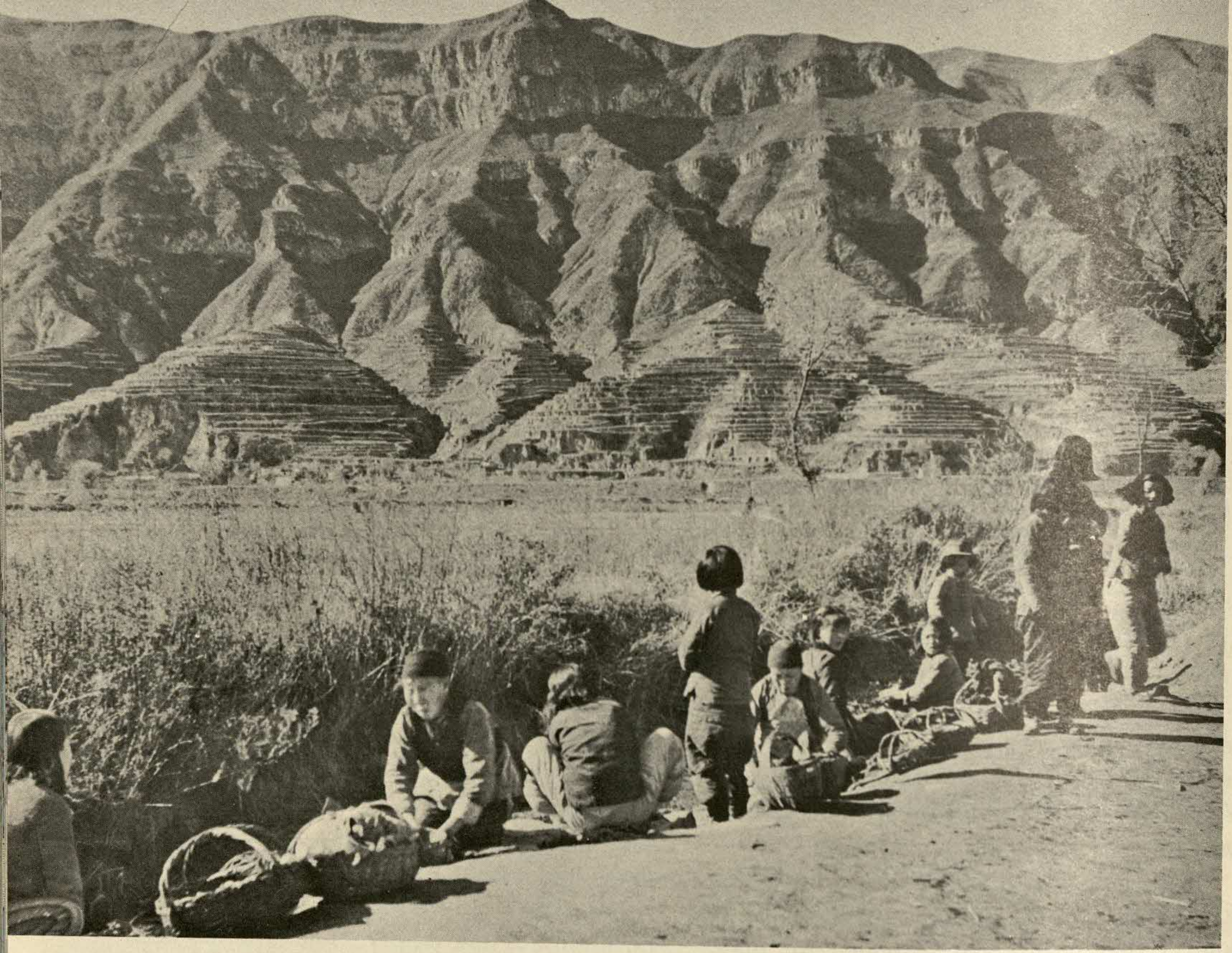


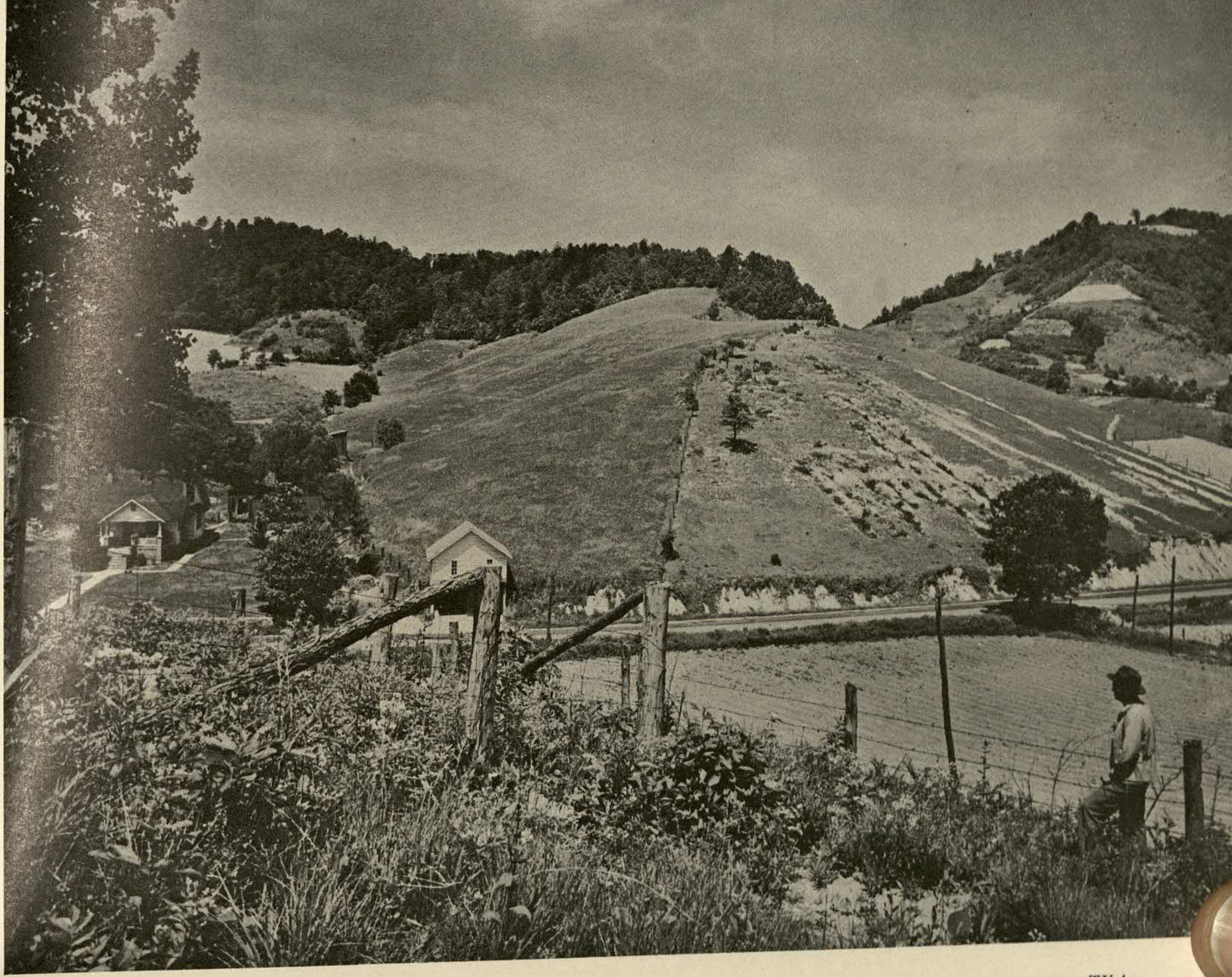
Figure 336. Where land has been lost in Asia

© *Black Star*

Add to the soil lost from this field the soil washed from thousands of other fields. The result is a vastly poorer land. And the racing water may cause disastrous floods farther down the river valley. Homes and towns and fields may be destroyed; waterways filled with earth are made useless. Everyone is poorer, not because it was wrong to use the soil, but because it was not used wisely.

Misuse of other resources. Stories could be told of the misuse of other natural resources, not everywhere, nor in all times, but enough to have tragic consequences for vast numbers of people. Millions of acres of natural grasslands in our country have been over-grazed (p. 51), destroying the natural cover of vegetation and leaving the soil exposed to wind and rain. Forests have been recklessly cut, or have burned because of man's carelessness (p. 130). Minerals that can never be replaced have been wasted (pp. 149-150).

The early settlers in North America found it teeming with animal life—valuable birds, wild animals, and fish. It was to be expected that some of these would be reduced in number when the land was settled. But some valuable birds and animals have disappeared entirely. Others have become exceedingly scarce. This was not necessary. A direct result is the lack of game. An indirect result is the upsetting of the balance of nature. For example, some insects do enormous damage to crops, since certain birds, the natural enemies of the insects, have been killed or driven away.



TVA

Figure 337. Proof that something can be done

A world problem. The picture on page 354 was taken in northern China. In the distance are barren hills cut into countless gulleys, large and small. The lines near the bottom are terraces, where men still try to do some farming. Once the land may have sloped gradually enough so that all of it could be cultivated. But wind and water, out of control, have changed it to a bleak, almost useless bluff.

Other illustrations could be found in every inhabited continent. The exact extent of the loss is not known, for in many lands it has not been measured carefully. The fact is clear, however, that the losses are tremendous. This is one of the world's great problems, especially since a major problem for more than half the world's people is that they already have too little land (p. 299).

Something can be done about it. The picture above demonstrates that man can rebuild some land that has been damaged. Notice the contrast between the two sides of the slope beyond the road. Not many years ago the entire hillside looked like the part on the right. Deep gulleys were cut in the soil. The grass was thin and poor. The land was of little value. Then men went to work on the field that is shown on the left side. They added fertilizers, phosphate and lime. They planted a cover crop of grass. Soon "the wounds in the land began to heal." Now it is valuable land, because it again produces something, in this case valuable pasture. And if it is used properly, it can continue to produce indefinitely.

The airplane view on page 356 shows how

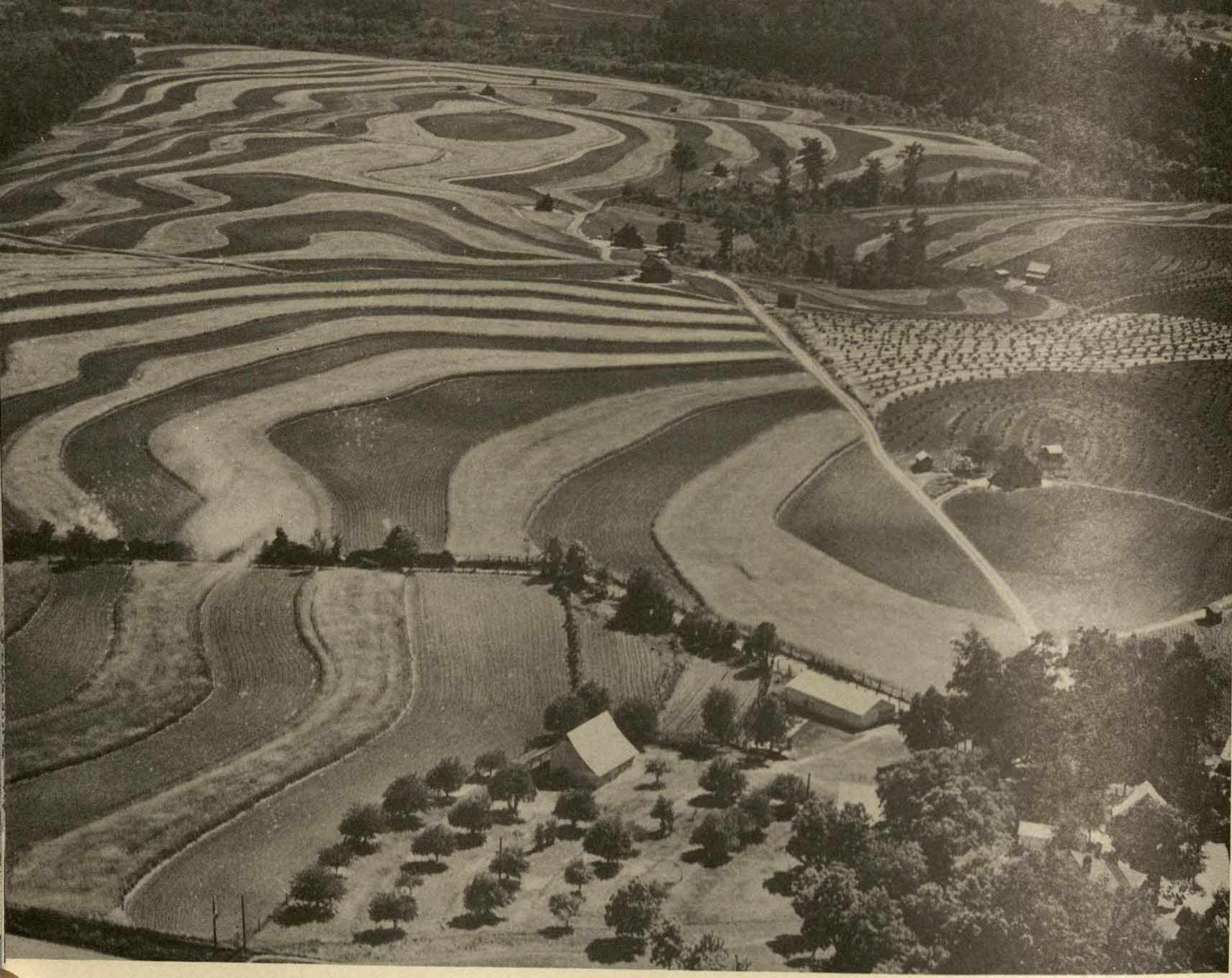


Figure 338. Saving the soil

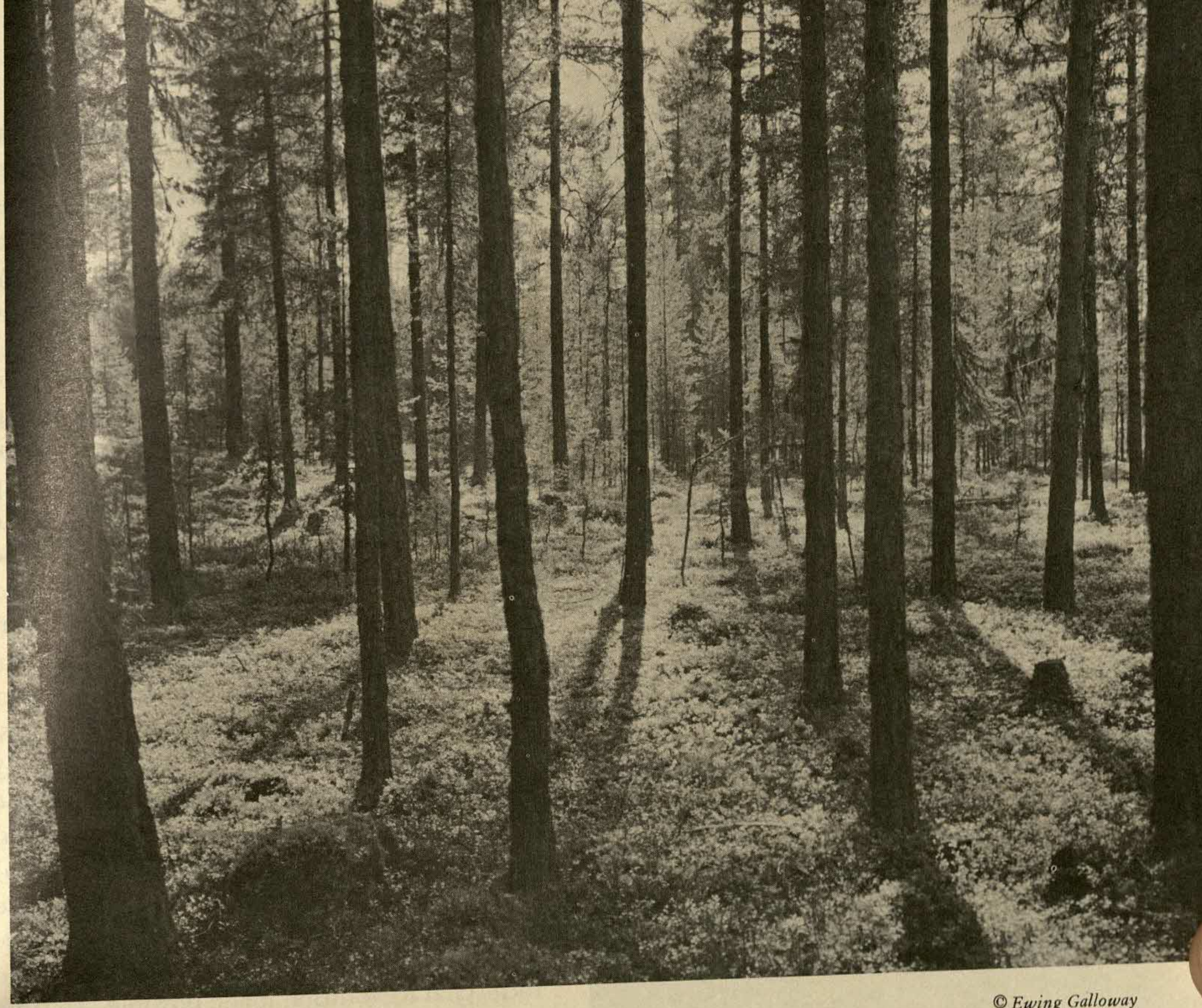
Soil Conservation Service

men may use sloping ground for farming, yet keep the soil rich and productive. Plowing furrows up and down the slopes would invite the water to follow these furrows as channels and make them into gulleys like those shown at the bottom of page 352. Instead, the farmers have plowed in curving lines along the sides of the slopes, not up and down. In this way each furrow acts as a dam rather than as a channel, holding the water needed for the crops and keeping the soil from washing away. This is known as contour farming.

The picture above also illustrates strip cropping, that is, planting crops of different kinds in alternate strips. Whenever one strip of ground is bare, the other has a growing crop such as hay. If, therefore, some loose soil begins to wash down the slope, it is caught and held by the thick mass of plants growing on the next strip.

Some rain water does collect at the bottom of the slopes, and flows on toward a stream. That cannot be avoided, but even there the soil can be protected by keeping it planted to grass, or trees and bushes. In the middle distance, on the right hand side of the picture, you can see an irregular line of trees and shrubs which were planted for this purpose. They not only keep the soil from washing away, but also make an excellent home for birds and small animals.

In other places where the needs are different, and the problems are different, the solutions are different. These two pictures illustrate the basic fact, however, that something can be done. One shows that men can re-



© *Ewing Galloway*

Figure 339. A well managed forest

store damaged grazing land to new usefulness. The other shows that men can do things that will guard against the loss of precious soil.

Doing something about the forests. The basic problem of forest use is that the trees of the world are not growing as fast as they are cut. That means that each year the world is a little poorer in this natural resource. Anyone can see what will happen if such overcutting keeps on long enough. There will be no forests.

The picture above shows a place where men are taking some essential steps in solving this problem. They are caring for the forest, so that new trees will grow as fast as others are cut. The underbrush is kept clear, and young trees are protected when the older trees are removed. A constant watch is kept against fire. Men frequently examine the trees to make sure there is no serious threat from plant diseases. As a result, the owners of this forest in Sweden can take a valuable crop of logs each year. Yet their basic wealth in trees remains as great as ever. This recalls the story of growing trees as a crop, on page 130.

Another essential in forest conservation is the planting of new forests. This is a work in which millions of people can help, wherever they live. Every new tree planted is that much gain.

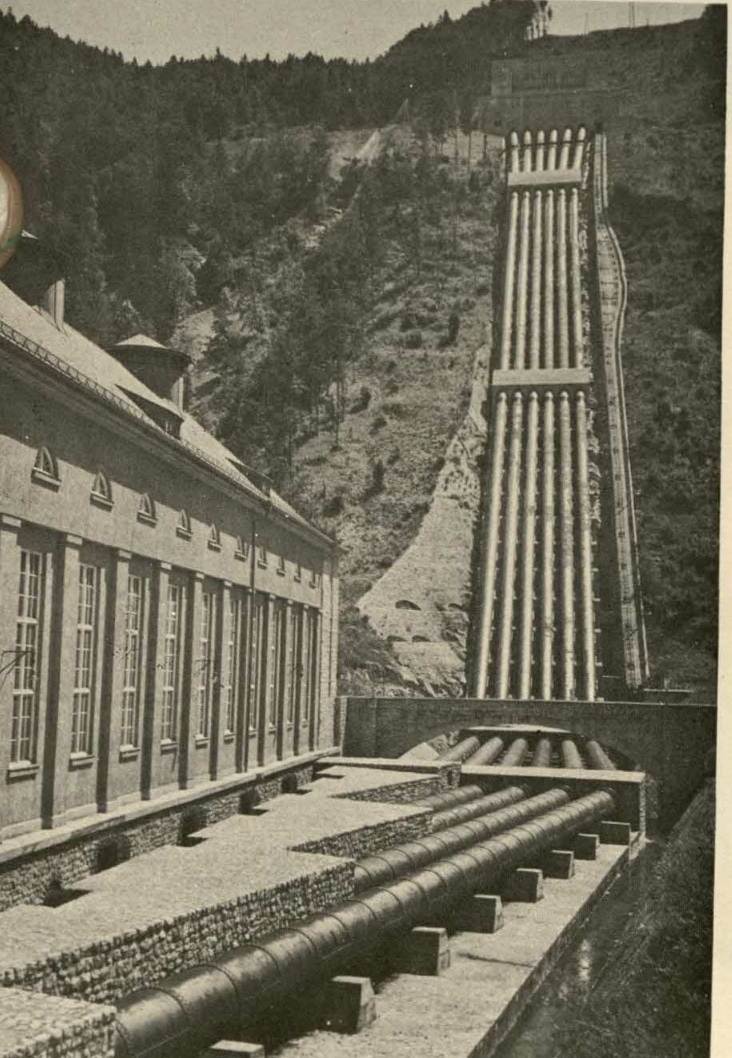
One of the most interesting stories about forest planting comes from France. More than a century ago, people were leaving an area called the Landes, or sandy plain. This is in southwestern France, near Bordeaux (p. 394). In this area, moving sand dunes were destroying towns, farm lands, and forests. Also, malaria was common, partly because of extensive swamps and many mosquitoes.

Then the French government went to work. The swamps were drained. Pine trees were planted where the swamps had been, and on the sand dunes. Today this area is a great pine forest, producing large quantities of lumber and turpentine each year. The dangers from malaria are past. People have moved back into the Landes, which is now a prosperous part of France.

What about mineral resources? You will remember reading about mining, the robber industry, that always takes away, and never puts anything back (pp. 149-150). There is never a second crop of iron ore or coal or petroleum.

Guarding against wasteful use is therefore a first essential in conservation of mineral resources. Man can also try to use, whenever possible, the types of minerals which are so abundant that the supply probably will never be exhausted. Such minerals are stone, clay, and sand. But these, of course, will not do the work of coal and petroleum.

Figure 340. A substitute for coal © *Ewing Galloway*



The picture on this page calls attention to a source of power that can be used widely in place of the coal and petroleum which can never be replaced. It is water power. As long as the sun shines, and the clouds rise, and the rains fall, so long will water run from the hills and mountains back to the sea. And man can get power from the falling water. This natural resource can never be used up.

Men have made some attempts to use water power for many centuries. Before the Industrial Revolution, many small factories in early New England, for example, were run by the power of falling water. Then the Industrial Revolution not only extended the use of coal but also made possible a much greater use of water power. It takes elaborate machinery to harness a large river, machinery which the Industrial Revolution made possible. In time this revolution also brought the use of electricity. Before electricity was used, a factory run by water power had to be located at a waterfall. The power could not be transferred to other places. But electricity can be generated at a power plant, in the mountains, or wherever the waterfall may be. Then the electric power can be sent along wires to distant towns, villages, and factories.

The world today has a truly enormous amount of water power that could be used, probably half of it in Africa and South America. So far, it is estimated, man has used scarcely a tenth of the water power that could be developed. The world of tomorrow, as well as the world of today, profits every time the power of running water is substituted for coal or petroleum.

The sun itself may be used directly to run engines in this world of tomorrow. It gives off energy. Men have demonstrated that the energy from the sun can be used to run small engines. So far this is too expensive to be practical. The time may come, however, when greater use will be made of the sun's energy, and when "sun-engines" will be more efficient.

Men also hope that the power of the atom can be harnessed. It was used in making the world's most destructive bomb. The problem now is how to control this unbelievably great power so that it will run machines and light cities in a world at peace.

Doing many things at once. The conservation of natural resources is a many-sided problem. Fortunately, many things may be accomplished at once. For example, the planting of a forest on a mountainside will make it possible, in time, for loggers to make a living. It also will keep the soil from washing away, help prevent floods in the lowlands, provide a pleasant place of recreation, and furnish a setting where birds and wild animals can thrive.

Men had several needs in mind when they established TVA (Tennessee Valley Authority) and built Hoover Dam and the Grand Coulee Dam. These are only examples of the really big things which have been done in our nation to improve the use of natural resources. Each project serves many needs. The Grand Coulee Dam, for example, will make water available for the irrigation of a million acres of land. It helps control floods, by holding back surplus water and permitting it to flow evenly to the sea. And the electric power generated by falling water at the dam could light a dozen cities and provide power for thousands of machines.

How science helps. Most progress in the use of natural resources is the result of careful study. One outstanding illustration is the famous Forest Products Laboratory at Madison, Wisconsin. Since 1910, scientists have been at work in that laboratory studying the many problems associated with the use of wood. They try to find new uses for familiar trees as well as for some unfamiliar ones that may have been overlooked in the past. They seek ways of eliminating waste.

In other laboratories, universities, and government offices, other men do similar research in their own special fields. These include the men of the Soil Conservation Service in the Department of Agriculture, and the men of the Bureau of Mines. Many farmers, loggers, miners, ranchers, fishermen, and other citizens, have also discovered new and better ways of using natural resources. In conservation, the men in the fields and forests are partners with those in the laboratories.

Helps in Learning

1. Choose four familiar things in your home or classroom. Trace each of them back to the natural resources from which the materials originally came. How does this illustrate the fact that all life depends on natural resources?

2. Explain the difference between the normal work of wind and water, and the damage they do when they get out of control.

What action by man helps wind and water do damage to natural resources? What can people do to help bring wind and water under control? Illustrate your answers to each of these questions by using pictures in this chapter.

3. What can be done in almost every community to protect or to increase our resources in trees? How will such action benefit the community?

4. Substitution of new sources of power will help conserve the mineral resources. What does this mean? Illustrate with specific examples.

5. Where would you expect to find greater opportunities for using water power, in the Andes Mountains or along the main stream of the Amazon River (p. 383)? In the cold northern part of Russia or in Germany (pp. 386-387)? In Arabia or in India (pp. 372-373)? Tell why in each instance.

Why would you expect South America (p. 383) to have much more water power than Australia (p. 391)?

INTERDEPENDENCE

People are dependent on each other, not in one way, but in many ways. It would be impossible even to list all of the ways in which we are dependent on others in this highly complex world, or the ways in which others depend on us. Through your study of A World View you have learned to recognize certain kinds of interdependence. How well have you learned to observe what goes on in your community? How clearly can you see the pattern of interdependence that exists there?

Interdependence within a community. The picture on the opposite page suggests many kinds of interdependence. The farms in the background suggest dependence on the soil and the men who work directly with the soil in producing food crops which sustain life. The railroad tracks, the paved highway, and the huge trucks show the vital part that transportation plays. The oil tanks alongside the railroad tracks indicate dependence on the mineral resource of petroleum. The smokestacks suggest a small factory, creamery, or sawmill. In a community such as this, surrounded by forested mountainsides, we may be sure that much wood is used for fuel. Probably some trees are cut and made into lumber.

We see no people at work in this picture, but we know that the kind of life which goes on in that community depends on human activity. The trucks will not roll without drivers. The grain elevators will be empty unless the farmers cultivate the soil and plant and harvest their crops of wheat and rye and oats. Someone built the telephone line which links this town with thousands of other towns and cities. Someone else sits at the switchboard in the telephone exchange to handle calls. So we see clearly in this one simple picture many examples of the interdependence of people within this community—based on natural resources and on the work of people going on constantly within the community.

Interdependence between states. The picture on page 362 was taken in a textile mill in Greensboro, North Carolina. The woman is placing spindles in a machine. The picture itself shows one way in which the workers in this factory are dependent on workers in other parts of the country. The machine which the woman is using was made in Hopedale, Massachusetts.

The map on page 363 shows other places which supply equipment, fuel, or raw materials used in this factory. To list only a few—Maine, Massachusetts, and South Carolina supply machines and parts of machines. Dyes and chemicals come from another city in North Carolina and from Delaware, New Jersey, and Michigan. The materials used for sizing and finishing cloth come from Iowa, Illinois, Pennsylvania, Tennessee, Ohio, and Virginia. Some of the shipping containers were made in Georgia and South Carolina. The coal used is mined in Kentucky, Virginia, and West Virginia. The raw cotton may come from any of the southern cotton-growing states.

The fact that raw materials and finished products can move freely from state to state makes it possible for each state, in some measure, to specialize in producing those things which it can best and most economically produce. The people in each state can benefit by the specialized production of workers in other states. Every state has a greater variety of goods than it could enjoy if each state had to produce all the goods needed by the people of that state.

Interdependence among nations. A similar kind of interdependence exists among nations

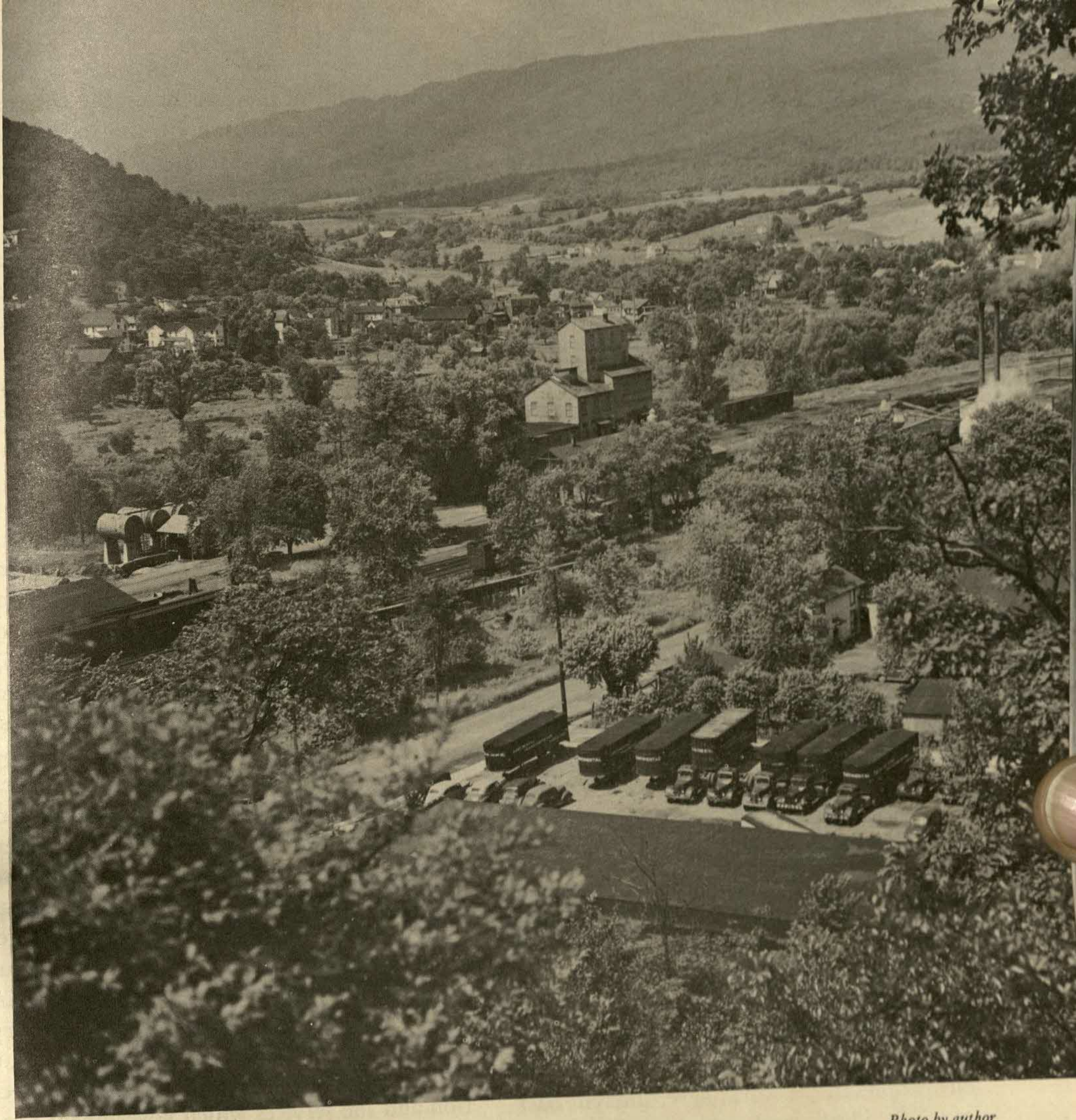


Photo by author

Figure 341. Signs of interdependence

and among the various major regions of the world. For example, Malaya produces raw rubber; Australia, wool and wheat; the United States, corn. No one nation produces everything that it needs. Every nation has a surplus of some things that other nations need.

Although we understand that most regions produce many different things, it is still true that each region is likely to produce more of those things which it is best equipped to produce. The cotton products of the textile mill in North Carolina may be sold in Britain, South America, or Africa. We have seen that there is not, and perhaps cannot be, a completely free interchange of goods between nations. Nevertheless the exchange of goods through the channels of international trade makes a great difference in all lands. This again is interdependence.

Figure 342. In a textile factory *Lelah Nell Masters*

Interdependence in the United Nations. The United Nations is an example of the many ways in which nations are cooperating, because they have come to recognize more fully than ever their need for cooperation. It is hoped that because of this cooperation the nations of the world may settle their problems by peaceful means and without resort to war. This is, and will be, a difficult task. The various peoples of the world have different backgrounds, ideals, and customs. They speak many different languages. Yet the effort to prevent war will go on. War prevents the kind of cooperation that helps to bring about higher standards of living. And a war fought with the weapons of atomic energy might well destroy what we think of as civilization.

There are many organizations or special agencies in the United Nations. Through them many of the nations of the world are seeking to cooperate in order to solve many difficult problems. One of these agencies, the International Labor Organization, is trying to improve working conditions. Another, the Food and Agriculture Organization, is working to increase the production of food for the world's people. Another, the United Nations Educational, Scientific, and Cultural Organization, is seeking to contribute to peace through education. Still another, the World Health Organization, is trying to prevent disease and control epidemics. The Universal Postal Union is trying to make the exchange of mail easier by uniting its member countries in a single postal territory.

Many of the difficulties which the different peoples have in learning to work together are due to differences in their backgrounds of experience and training. The education of the people in one nation differs from that in another nation. The ideas and beliefs that are inherited in one nation differ from those that are inherited in another. Some nations have modern machinery and other modern inventions while many nations are just beginning to learn their use. Also, there are differences in language not only from nation to nation but within a single nation. In some nations there is no common national language.

Interdependence in government and education. We have seen many times the ways in which government is related to almost every kind of human activity. We carry on our work as we do, in part because of the protection and the services which government provides. But the best government requires the most thoughtful study of the principles on which government is based. It requires also that each citizen give some of his time and energy to government. Our way of life depends upon a good and stable government, and we cannot always expect others to keep it either good or stable. Each must do his part.

We have learned, too, that we depend greatly on education—on the discovery and spread of knowledge. Through education we can take advantage of what others have

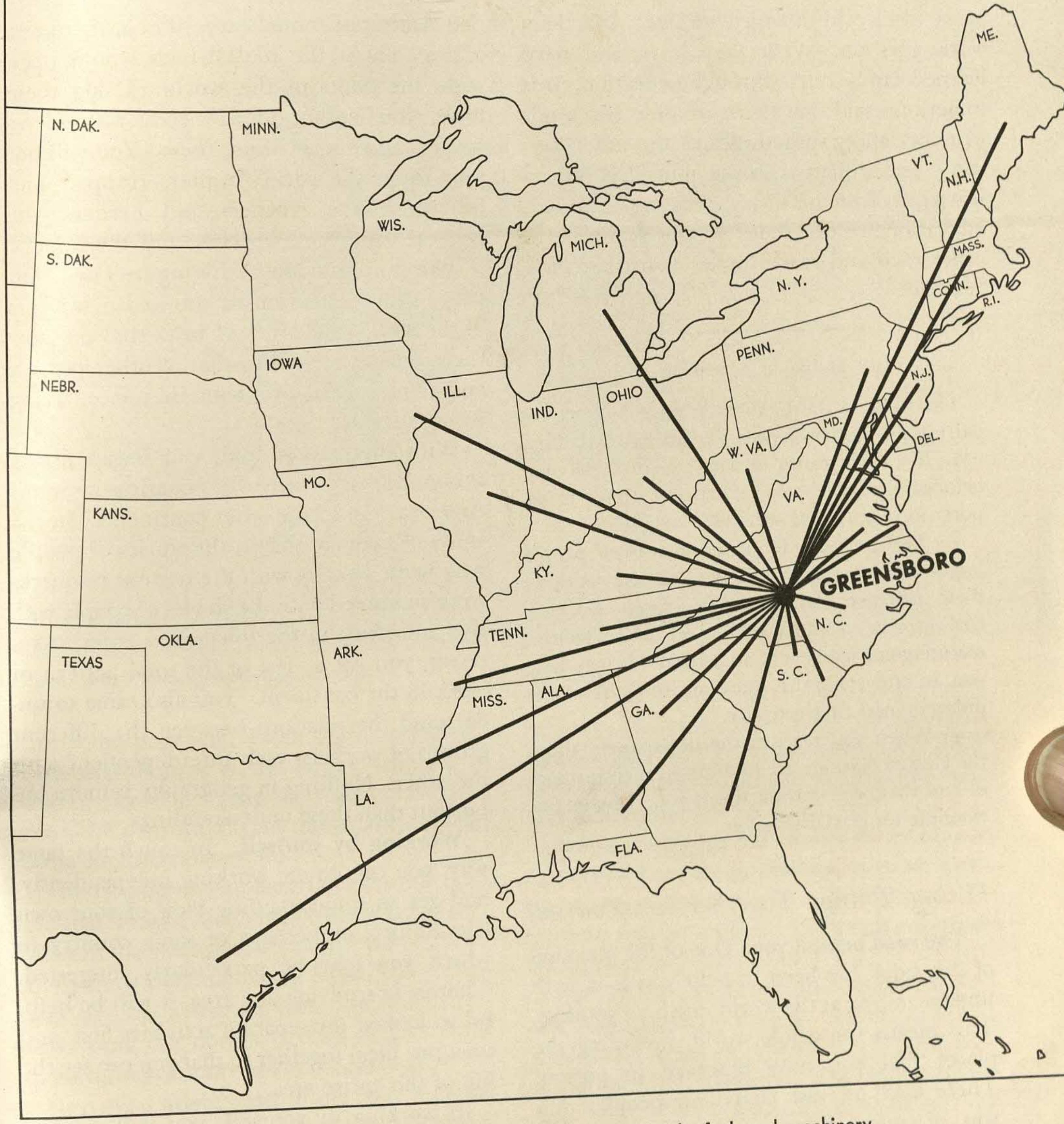


Figure 343. Where a North Carolina textile factory gets its raw materials, fuel, and machinery

learned. We can benefit by the experience of others over many centuries. Men have learned much about living together, much about using and conserving natural resources. Many men have thought deeply about the ideals of behavior which are good for society and for the individual.

Others have experimented in creating new tools and in developing new kinds of power to do the work of the world. Still others have studied ways to improve the health of human beings.

In countless other ways men have studied, and worked, and sometimes fought, to improve the world in which we live. And their work goes on. What they learn and have learned can be ours—through education. It is sometimes said that there are only two kinds of experience, your own and the other person's, and a man is stupid indeed if he can learn only from his own experience. Through education we can stand on the shoulders of other men and reach higher than they have reached.

Helps in Learning

The men in the picture on page 365 are repairing an electric power line in Pennsylvania.

1. To what group of workers do these men belong—workers in manufacturing, trade, transportation, or special services?
2. Tell how the following groups of people might be dependent, in part on the work of these linemen—dairy farmers, forest workers, coal miners, workers in a steel mill, doctors, maintenance workers at an airport. It may help you, in answering this question, to think of the different uses of electricity.
3. When you read in the newspapers about the United Nations, try to think in each instance of how that organization affects you. Choose one example for class discussion.

Fitting Things Together for Yourself

The road behind you. One of the purposes of this book has been to help you look with understanding at the world in which you live. This means the whole world, including the places that you have observed in person. There also are vast lands and peoples that you, of course, have never visited. Yet you have "seen" them through the aid of maps and pictures, written text, graphs, and statistics. These are the tools of geography which bring the world to us.

You did not get an understanding view of the entire world at once, at a single glance. It is far too complex for that. First, there was a story of how people live and work in one American community. Then, there was a story about the tools which would open wide the doors of the world. Using these tools, you learned of *five great natural resources and how men use them.* You will not soon forget the world's hunters, trappers, and fishermen, the ranchers and herders, the farmers, the forest workers, and the miners.

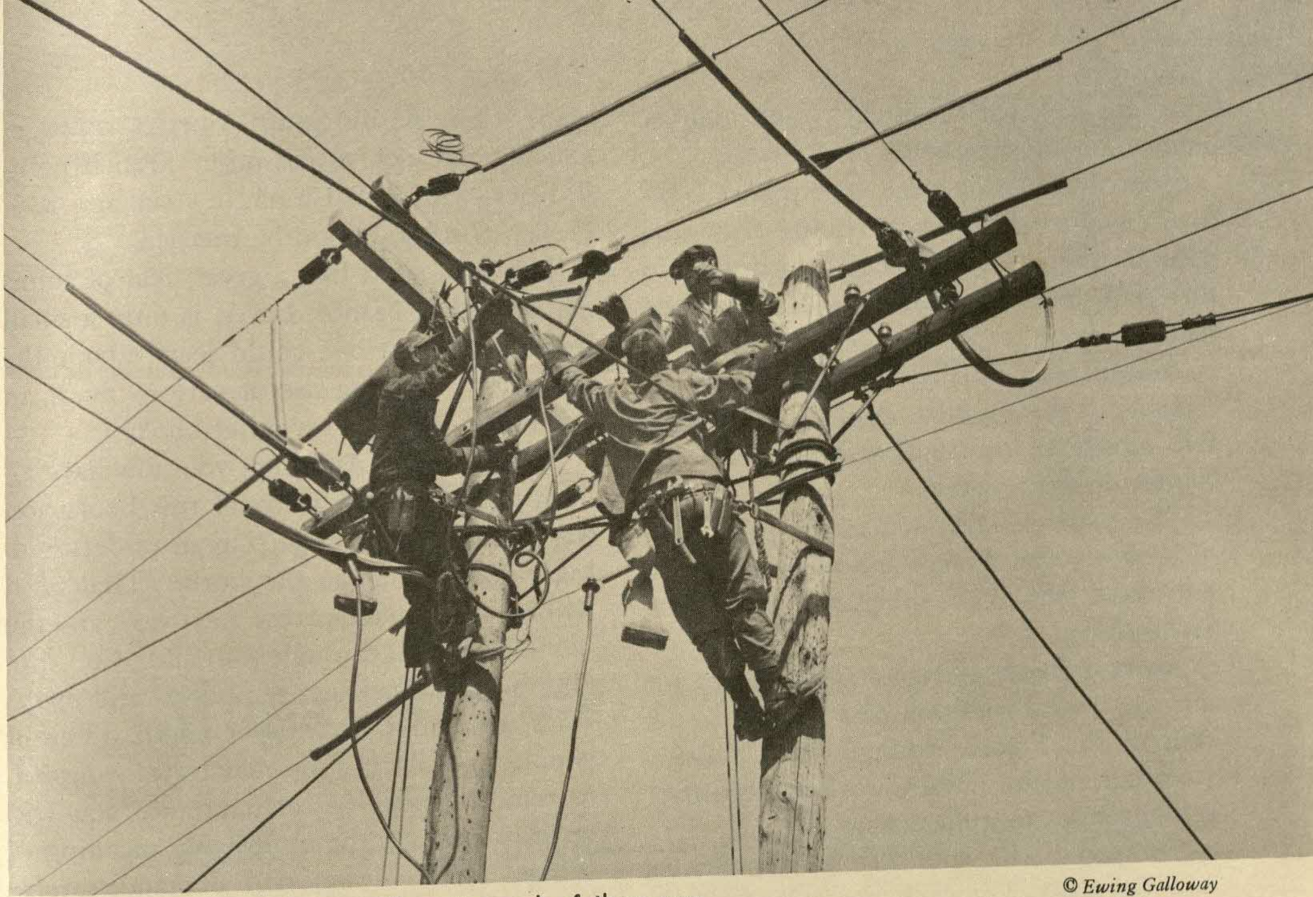
The stories about "A Living in Town and City" called attention to the urban workers of the world—the kinds of work they do, how their work is related to that of other people, and some special problems they face, living where they do.

With this background, you began *fitting things together*—in North America, in South America, and in the other continents. In the study of each continent, the stories of people who work directly with the natural resources were combined with the stories of people who live and work in the towns and cities. As a result, you got a view of the total pattern of work in the continent. You also came to understand the relations between the different groups of workers, each interdependent with the other. Nothing in geography is more important than these understandings.

Working by yourself. In much the same way, you can go on, working independently, and get an understanding view of your own community, or perhaps of some country in which you may be particularly interested. That is, in studying any area, it will be helpful to look at the separate activities first, and then put them together so that you can see the life of the entire area.

In working by yourself, you will want to make full use of all the tools of geography with which you are now familiar. Each tool has its own special value. Each is important. For example, there is a great treasure of information written in map language. And this treasure is easily uncovered. Consider, for example, what you can read about France from the maps in this book alone.

You might begin with the map of western



© Ewing Galloway

Figure 344. Many people depend on the work of these men

Europe on page 394. From this map you can learn that France is the largest country in western Europe; that it reaches entirely across the peninsula from the Atlantic Ocean to the Mediterranean Sea.

The numbered east-west lines on this map tell that France lies almost exactly halfway between the equator and the North Pole. The colors show that about half of the land is less than 500 feet above sea level, and that a few peaks near the border of Switzerland reach an elevation of more than 10,000 feet.

Next, you might turn to the map showing land forms, on pages 380-381. From this map you can learn that most of the land in France is in plains, though hills and mountains rise in the southern and eastern parts of the country.

The rainfall and temperature maps on pages 372-377 have much to tell about the climate of France to those who can read their language. The rainfall map shows that nearly all of France has an average yearly rainfall of between 20 and 40 inches—an amount that is usually described as "moderate." More rain, between 40 and 60 inches, falls in the hills and mountains.

People living in the lowlands in France have cool weather in January, with an average temperature between 32° and 50°. In the hills and mountains, the January weather is cold, less than 32°.

July brings warm weather, between 50° and 68°, to most of France. But the hills and mountains stay cool, between 32° and 50°, while the lands along the Mediterranean are hot, with average temperatures of 68° or more.

Important facts about the people of France can be read from the population map, on pages 370-371. This map shows that France is less thickly settled than most other countries in the middle part of western Europe. And the western half of France is less thickly settled than the eastern half.

It is at once apparent from the map on

pages 392-393 that the French rank high in literacy among the people of the world.

From the map on page 300, you can discover where men make a living from the natural resources in France. According to this map, farming is spread widely over the land. Fishing towns dot the coast. Mining is concentrated chiefly in the northeastern sections of the country. And forest workers live mostly in the southwest and near the border of Switzerland.

The map of cultivated lands, pages 384-385, shows that France has about as much cultivated land as any other country in western Europe.

An examination of the maps on pages 306 and 307 reveals that between 30 and 40 per cent of the French workers make a living from agriculture. Many workers also make a living from manufacturing.

Compared with countries such as Britain and Germany, France is not a land of big cities. This fact is evident on the map of urban areas, pages 160-161, and also on the map of western Europe, page 394.

By consulting the transportation map on pages 388-389, you can see that almost every corner of France is well served by major surface transportation routes—railroads, highways, or inland waterways.

The maps on pages 394, 378, and 379 give further details about transportation. On page 394 you can see that France has an excellent network of railroads and good rail connections with other parts of western Europe. The map on page 378 shows that the greatest ocean routes in the world lead to the "front door" of France. And from the map on page 379, you can learn that France lies within the main networks of the world's air routes.

That France is a member of the United Nations may be read from the map on pages 368-369. The map of Africa, page 390, makes clear that France has political ties with vast lands in that continent, including the huge island of Madagascar, off the east coast. The maps of Eurasia and South America, on pages 386-387 and 383, reveal other French political ties—with Indo-China, in Asia, and with French Guiana, in South America.

This may seem like a great deal of information about France, but it is only a small fraction of what one could learn about the country, by making use of various maps, in this book, and in many other books.

A look ahead. Although you now have almost completed the study of this book, you will need to go on in getting an understanding view of things in the world. That need will be with you tomorrow, next year, and the next, in fact, all through your life. Continually the radio, newspapers, books, and magazines will shout or whisper about different peoples and places. You may travel, yourself, to remote lands. In each instance you will want to discover the underlying meaning of things. That always will demand careful study of different facts, weighing each one to see how important it is, and then *fitting them together* to see the whole picture.

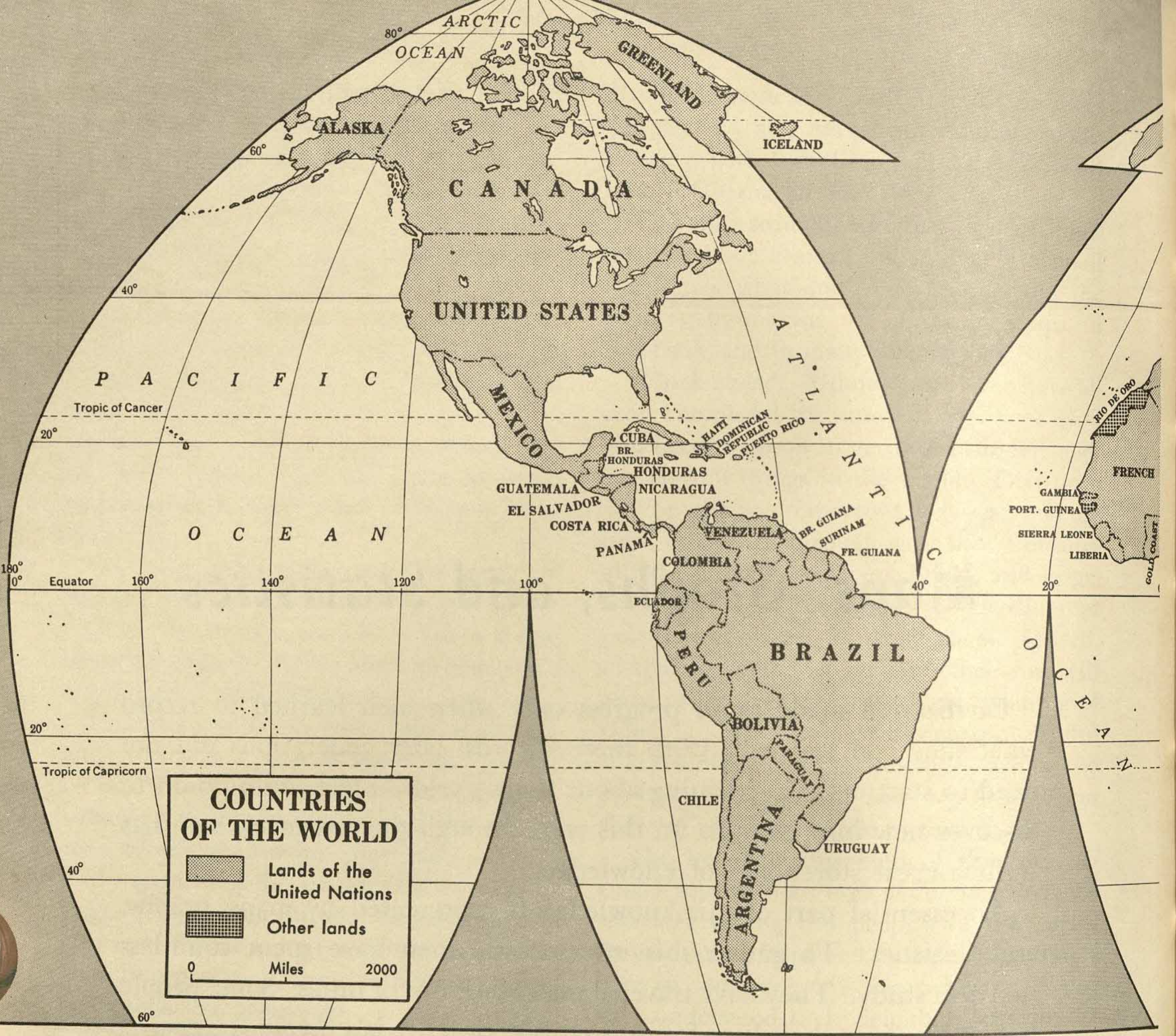
The need for this kind of thinking becomes greater than ever as interdependence increases among the peoples of the earth. At one time it appeared to make little difference in some people's lives whether or not they understood their neighbors, near-by or in distant lands. Today we speak of living in a "shrinking world," for the peoples of the world are being drawn more closely together by the swiftness of transportation and communications. But it is equally true that we live in an "expanding world." The effects of what we do in Iowa, Texas, or New York may be felt in China, Brazil, or Norway. Our actions are not limited in their influence to the small area in which we live. And the actions of people in other parts of the world may bring great changes to us.

In the whole story of human life on this earth, therefore, there never has been a time when it was more important for people, everywhere, to have a world view.

Maps, Graphs, and Statistics

Civilization made rapid progress only when men learned to record what they had learned. With these records, later generations did not need to start over, in learning about their world. They could go on to discover new information. In this way, through the centuries, man has built a great storehouse of knowledge.

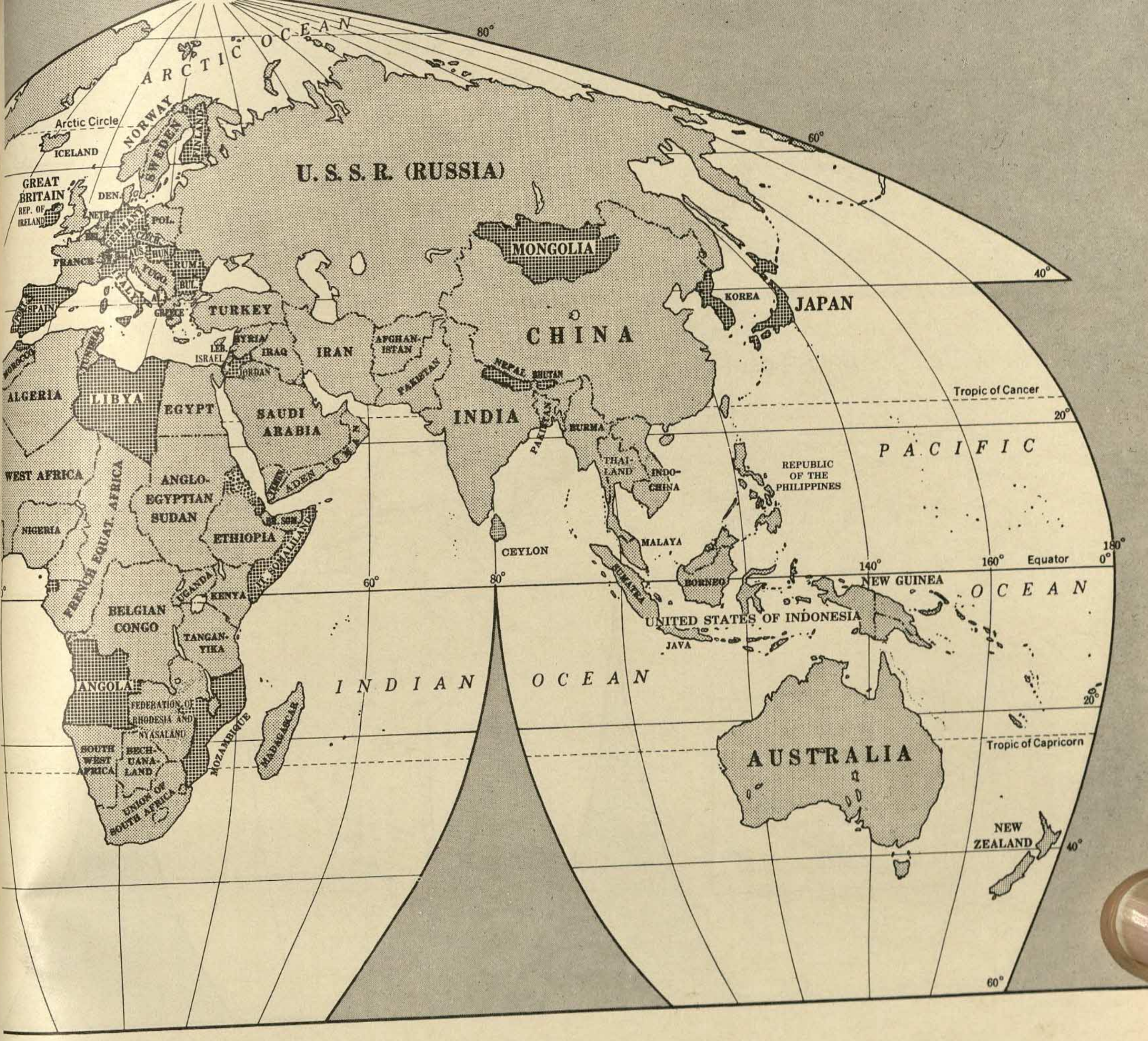
An essential part of this knowledge is represented by maps, graphs, and statistics. To gather this information, men have spent countless hours in study. They have traveled many millions of miles. Some people have even given their lives for it. So this knowledge is a precious treasure. Without it we could not have our modern civilization.



A view of the United Nations. Early in 1945, invitations went out from the United States, Britain, Russia, and China, asking dozens of different countries to send representatives to a meeting at San Francisco. Hundreds of men and women then met at San Francisco, from April 25 to June 26, 1945. Uppermost in their minds was the tragedy of World War II, which was then drawing to a close. They were trying to discover some way to make sure that no new wars should destroy the peace which was soon to come.

At this meeting, a new organization was born. On the day the meeting ended, the representatives of fifty nations signed the Charter of the *United Nations.* This Charter came into force on October 24, 1945. By that date more than half of the various governments at home—including those of the United States, Britain, Russia, France, and China—had ratified the Charter. That is, they had expressed their agreement with the action taken by their representatives at San Francisco.

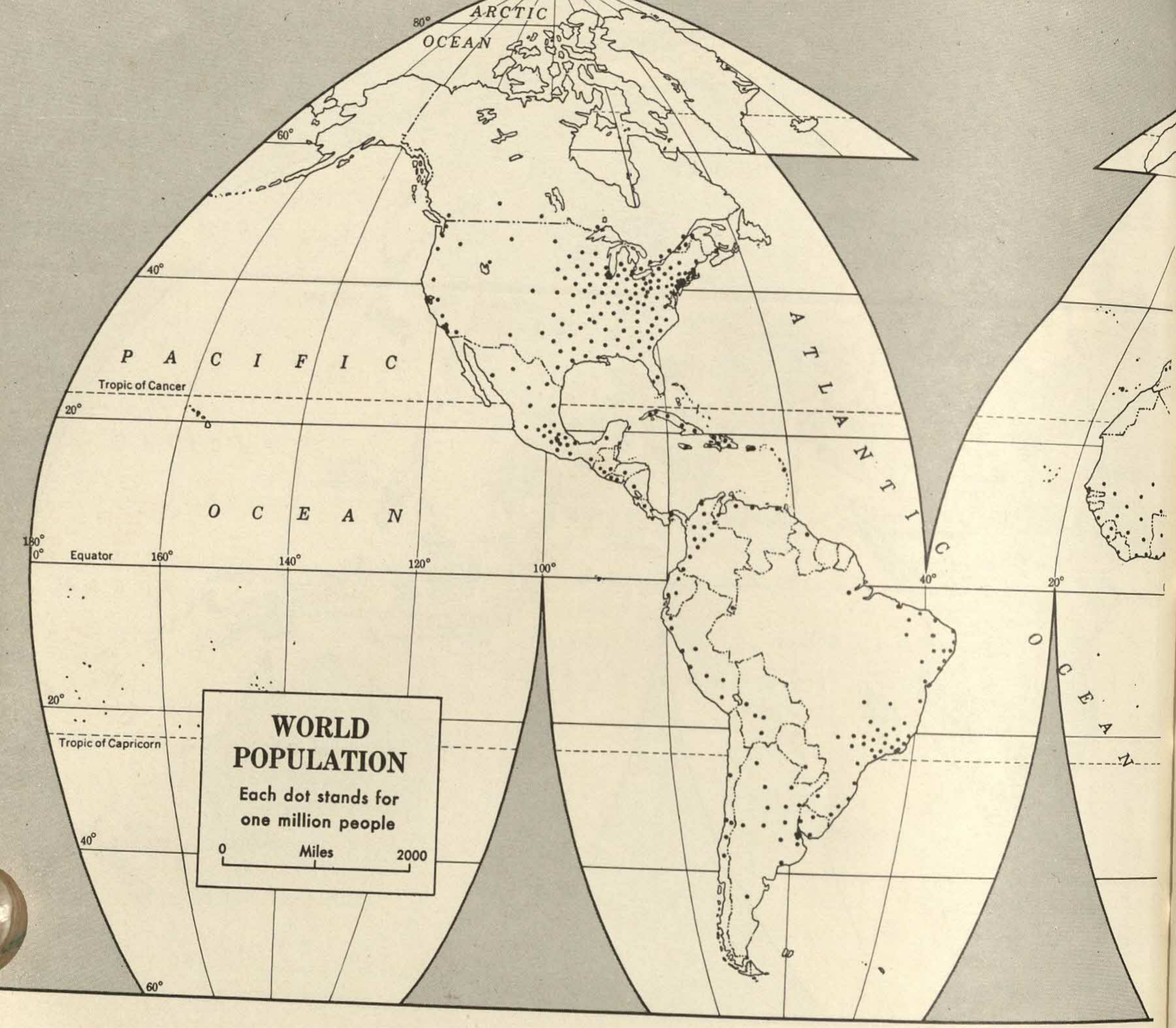
First and foremost, the United Nations was planned to maintain peace in the world. It



also was designed to develop friendly relations among nations; to emphasize certain basic human rights and freedoms for all people everywhere; to promote better standards of living; to encourage cooperation among nations in solving economic problems as well as social, cultural, and humanitarian problems. In an interdependent world, these are highly important goals.

The map above shows that nearly all the lands of the world are "Lands of the United Nations." The chief countries which do not belong were enemy countries during World War II—particularly Germany, Italy, and Japan. A few other nations do not belong, for various reasons. Seven new members have been admitted since the San Francisco meeting. Others will join from time to time. The day may come when all lands and peoples of the earth will belong to the United Nations.

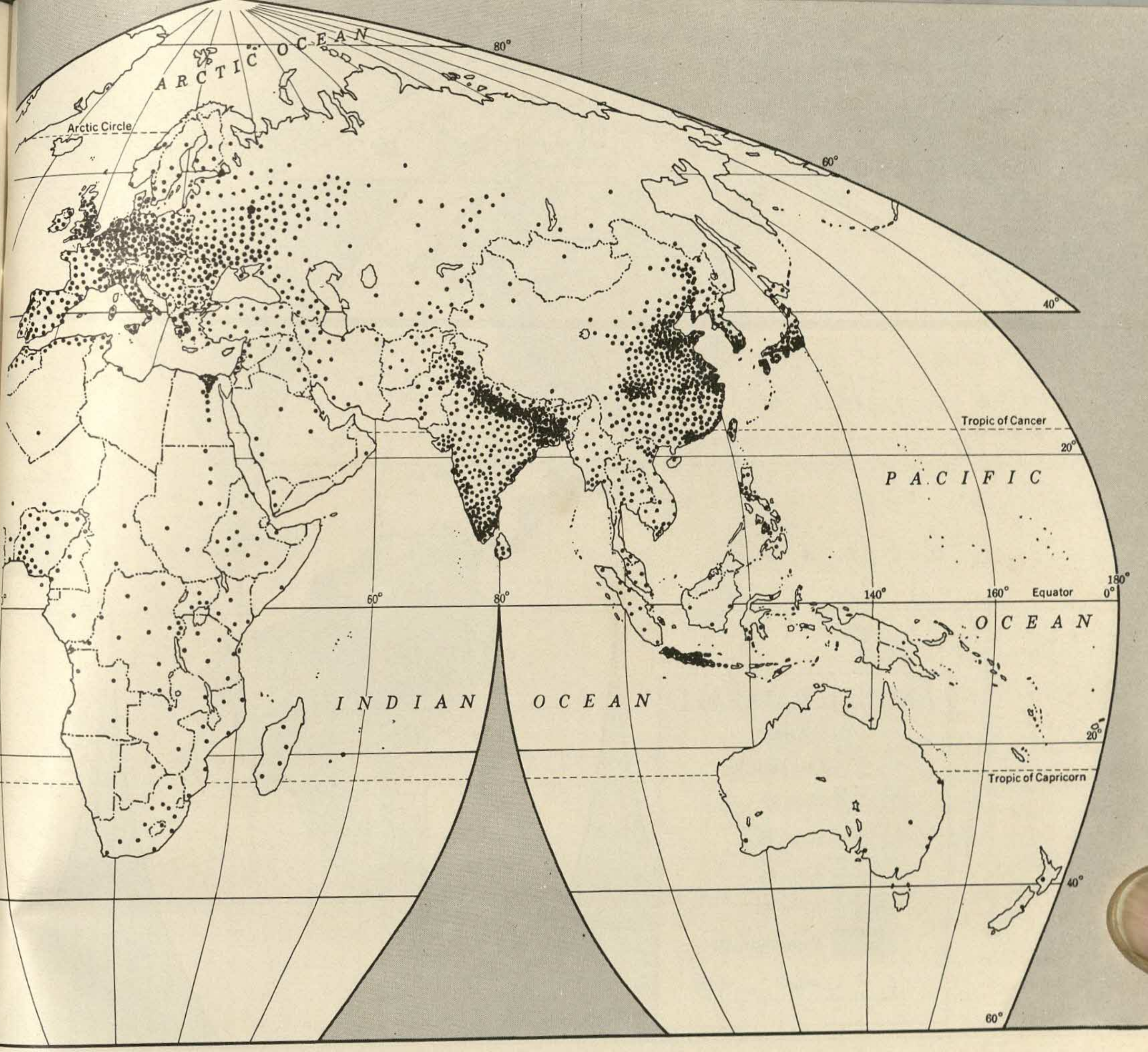
The permanent headquarters of the United Nations is in New York, where huge new buildings are being constructed for it. Some specialized agencies of the United Nations meet regularly in other cities, particularly in Geneva, Switzerland.



A world view of population. The dots on this map stand for all the people of the world, whether they live in towns and cities, on farms and ranches, in the forests, in lumber camps, or in mining camps.

On the map of urban areas, pages 160-161, each dot stands for a particular urban settlement. On the various colored maps of the continents, each dot stands for a specific city, (pp. 382, 383, 386-387, 390, 391). On the map above, however, each dot represents the number of people in a particular region. The people represented by one dot may live in a dozen or a hundred different settlements, or they may be part of the population of a great city.

As this map shows clearly, the greatest concentrations of population are in Eurasia, which actually has about three-fourths of the world's people. There is one great cluster of dots in Europe, another in the peninsula of India, and others in China and Japan. In sharp contrast, the other continents, North America, South America, Africa, and



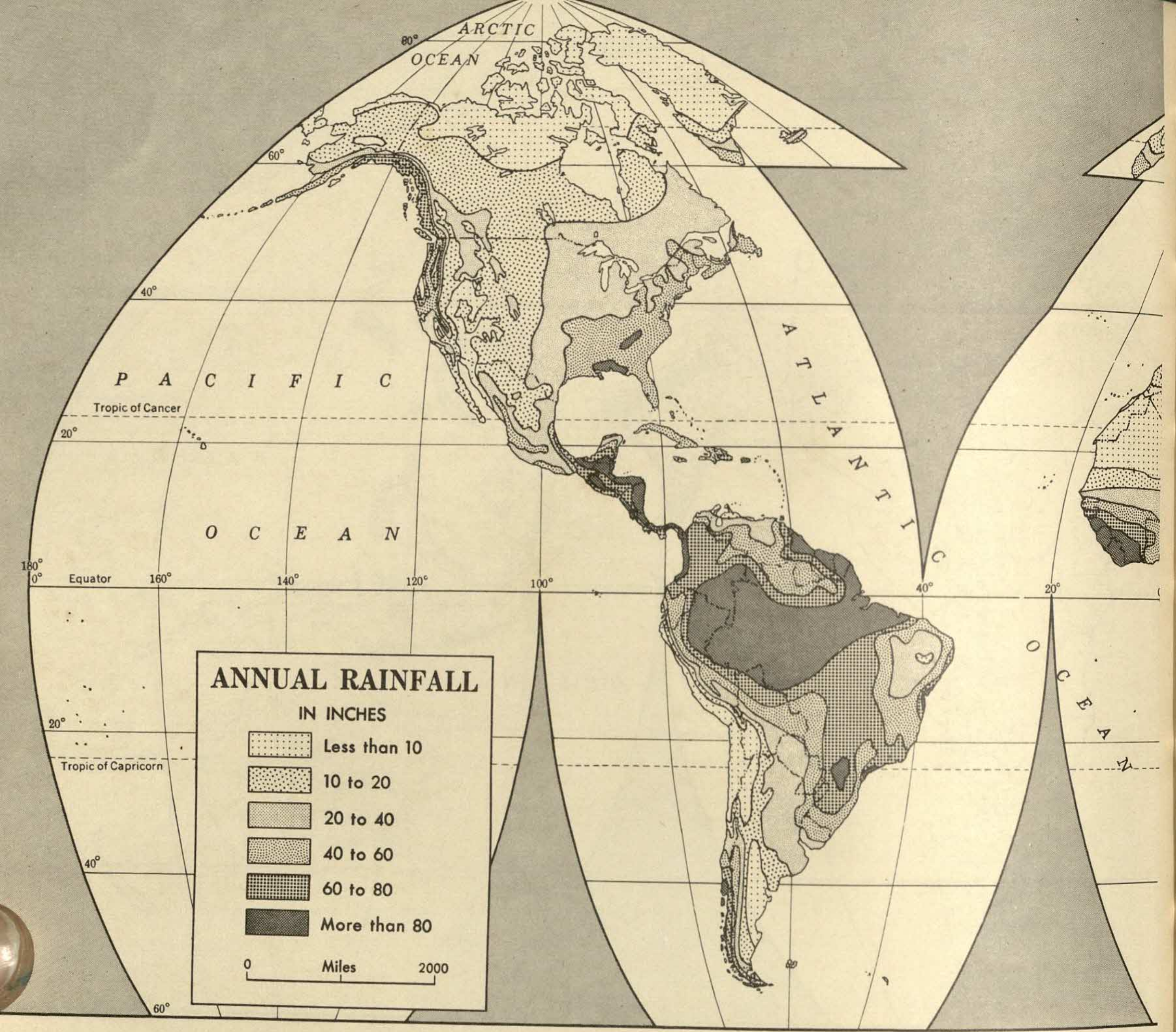
Australia are not nearly so thickly settled.

Pictures. It is obvious that some of the lands shown on this map are *thinly* settled. Others are *moderately* settled. And still others are *thickly* settled. Various pictures in this book suggest what each type of area may look like.

For example, thinly settled lands are shown in the following pictures: hunters and trappers (p. 33); herding livestock (pp. 43-51); dry land farming (top, p. 65); home of the Jivaros (p. 95); a forest land (p. 135); in Siberia (top, p. 149); Pan American Highway (p. 270).

Moderately settled lands are shown as follows: farm lands (pp. 5, 76, 93, 105); making sugar and turpentine (p. 133); mining limestone (p. 146); farm homes (p. 235).

Thickly settled lands appear in these pictures: in India (p. 113); New York City (p. 153); cities in Europe and Asia (p. 163); Chicago (p. 167); Calcutta (p. 297); homes and factories side by side in western Europe (p. 312).

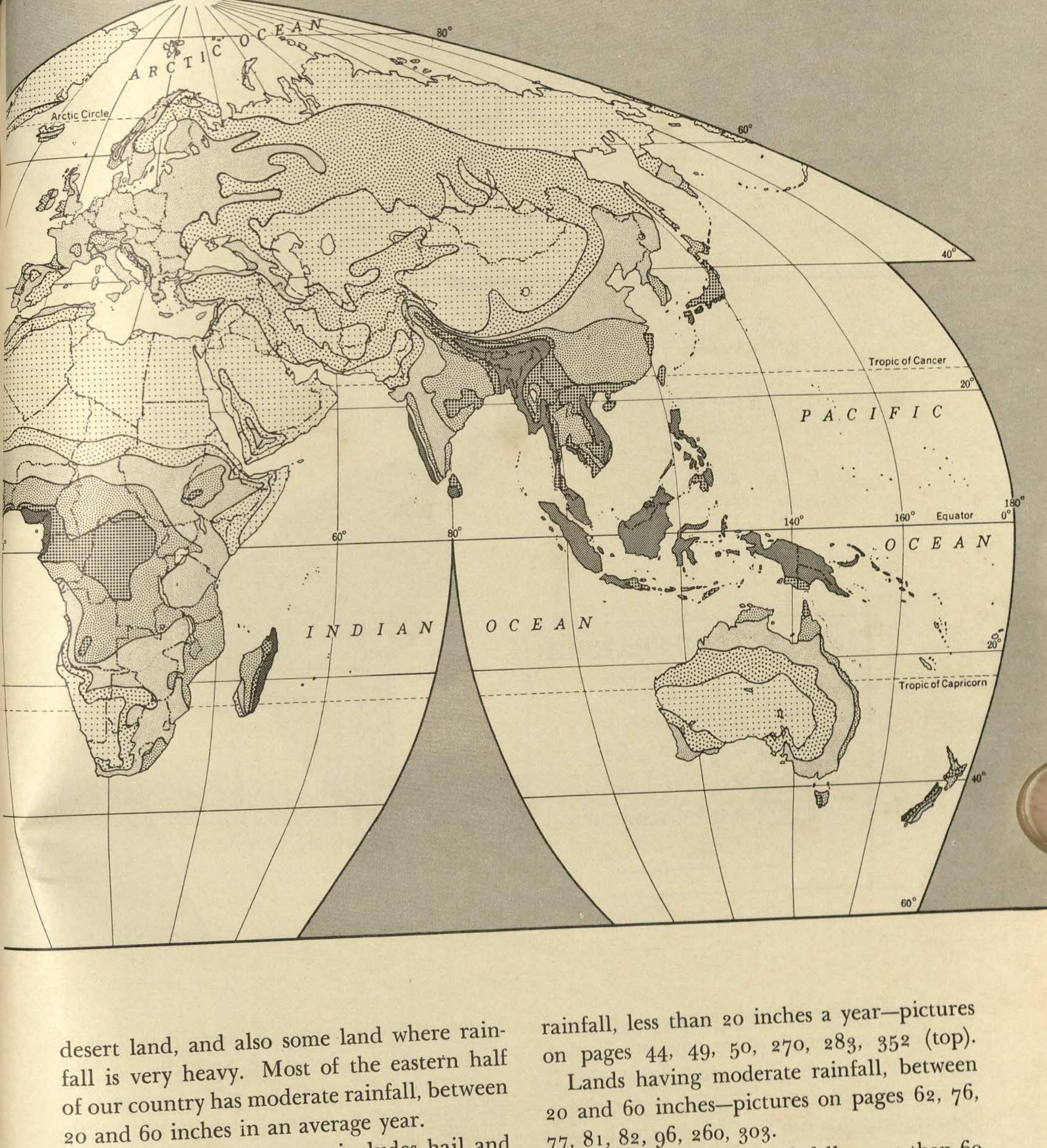


A world view of rainfall. It is clear from the map above that rainfall is very unequally distributed over the earth. Most of the land in the world has little rainfall, that is less than 20 inches. This at once limits the amount of land that can be used for farming.

Three areas stand out boldly as regions of very heavy rainfall. They are southeastern Asia and the islands of the East Indies; Middle America and the northern half of South America; and west central Africa. It is noteworthy that all of these areas are tropical lands, where the sun is never far from overhead at noon. With almost continuous warmth the air rises almost constantly, and then the moisture condenses and falls as rain.

There are other and somewhat smaller areas of heavy rainfall, for example, along the Pacific coast of Canada and northwestern United States, and in southern Chile. In these places, high mountains catch the moisture-laden winds which blow from the west much of the time.

As this map shows, rainfall in the United States varies a great deal. There is some



desert land, and also some land where rainfall is very heavy. Most of the eastern half of our country has moderate rainfall, between 20 and 60 inches in an average year.

On this map, RAINFALL includes hail and snow, as well as the water that falls as rain. Hail and snow are measured after they are melted. A story of how rainfall maps are made can be found on pages 66-67.

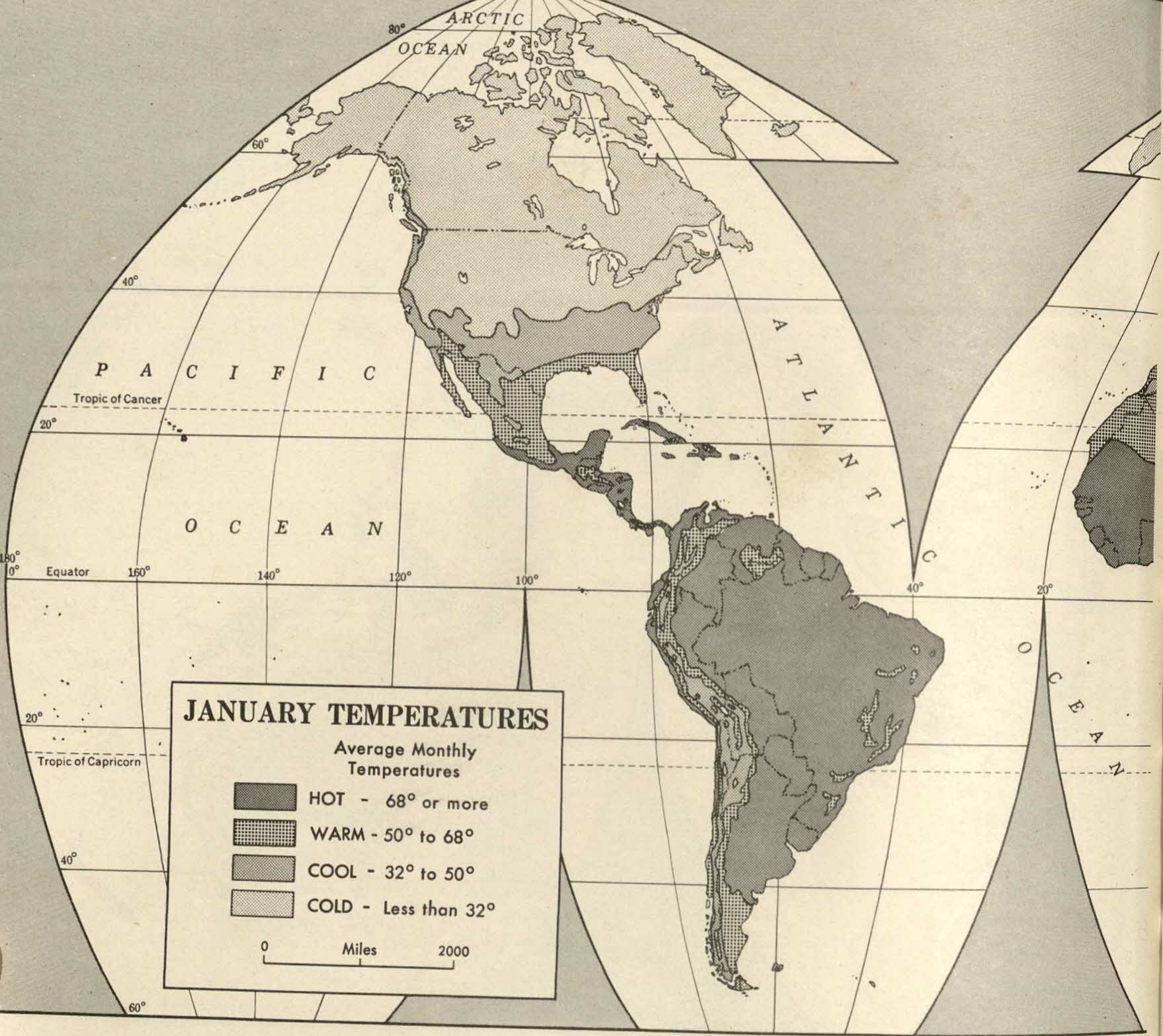
Pictures. Many of the pictures in this book will help you visualize the lands having different amounts of rainfall.

Lands in the world which have little rainfall, less than 20 inches a year—pictures on pages 44, 49, 50, 270, 283, 352 (top).

Lands having moderate rainfall, between 20 and 60 inches—pictures on pages 62, 76, 77, 81, 82, 96, 260, 303.

Lands having heavy rainfall, more than 60 inches—pictures on pages 31, 65 (bottom), 90 (middle), 95, 128, 339.

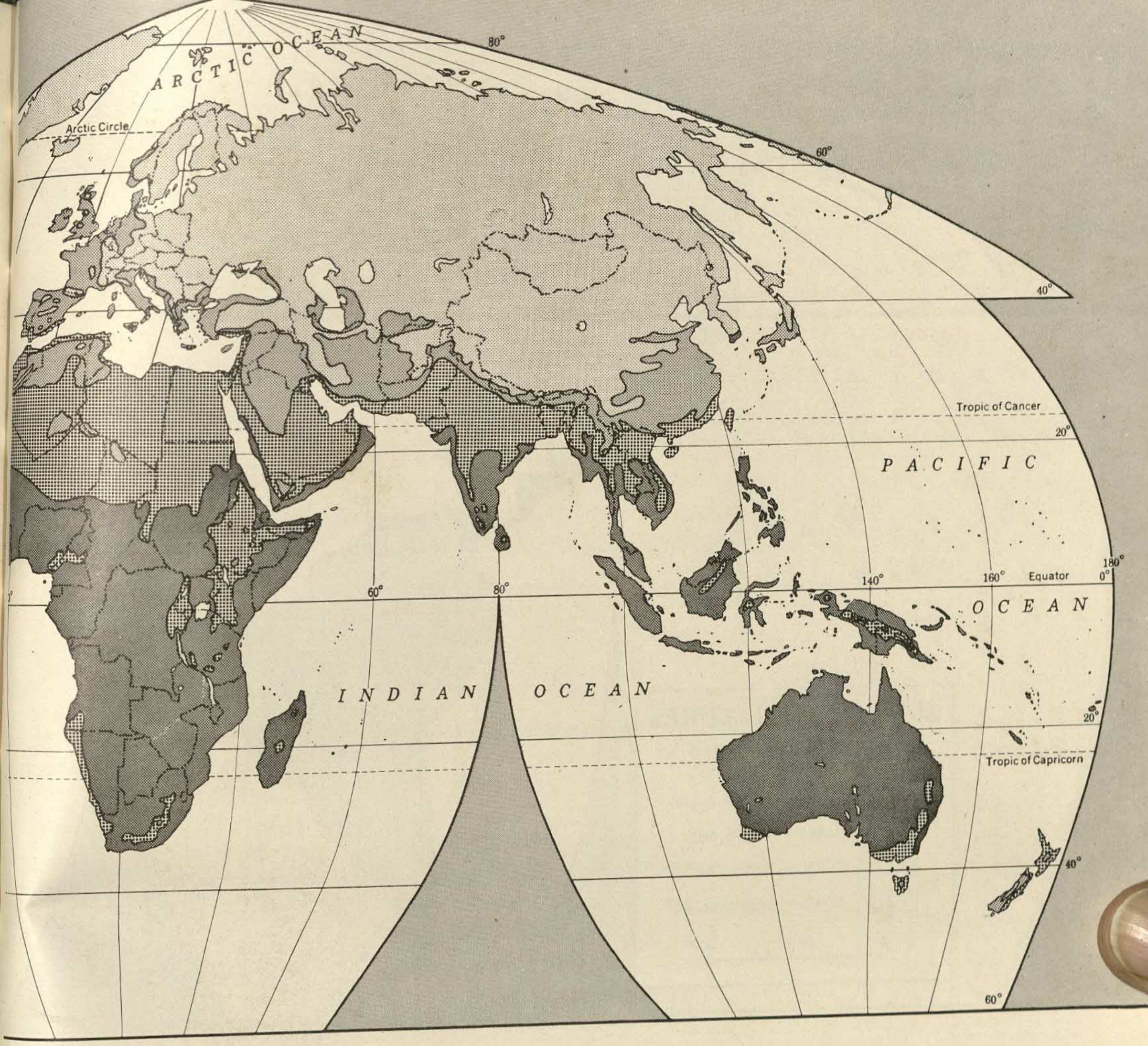
Certain patterns of work go with varying amounts of rainfall. For example, most grazing is in lands of light rainfall, farming in lands of moderate and heavy rainfall, and forest work in lands of heavy rainfall.



A world view of temperature in January. To the people north of the equator, January is a winter month. The noon sun is then almost overhead at the Tropic of Capricorn. That means that it is far from overhead in the United States, for example, or in Europe. Therefore, January is a winter month in the United States, and in Europe, and in other lands that lie north of the equator. For when the noon sun is low in the sky, the weather is much cooler than when it is high in the sky.

The map above shows that, in January, hot weather extends over almost the entire continent of South America, more than half of Africa, and nearly all of Australia. At the same time, cold weather, with average temperatures below freezing, has spread southward from the Arctic Ocean over almost all of Canada, half of the United States, nearly all of Russia, and the northern part of China.

Therefore, when it is summer south of the equator, it is winter north of it. And as the map on pages 376-377 shows, when it is winter south of the equator, it is summer north of it. You can read more about these "seasons turned around" on pages 67-68.

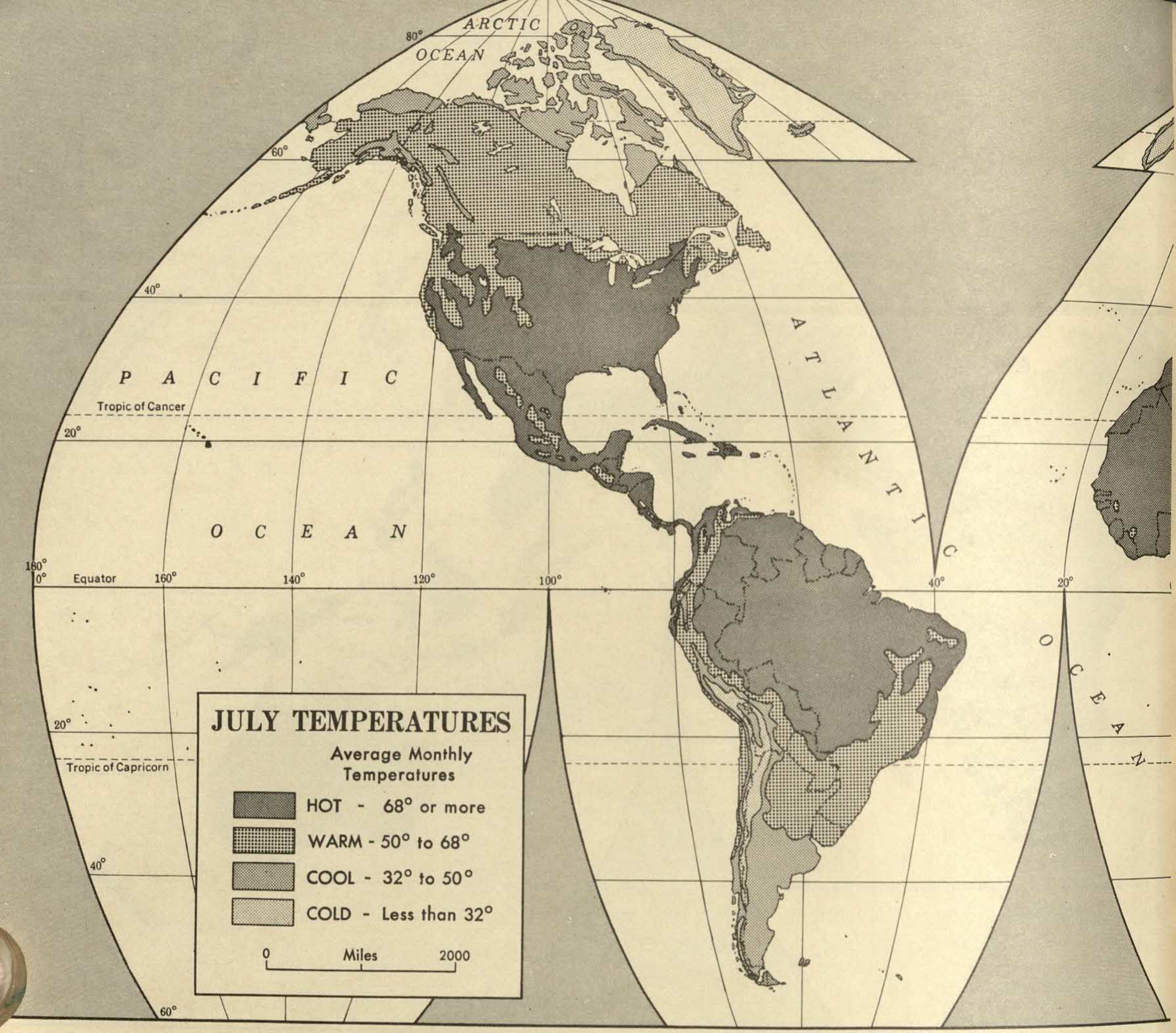


The map above shows clearly that winter weather varies greatly in lands north of the equator, in January. For example, the northern half of the United States is cold, but the weather is warm in the states along the Gulf of Mexico. In these states, winter does not mean snow and ice, only weather which is not as warm or as hot as it is in summer.

Map comparisons. If you compare this map with the map on pages 376-377, you will discover that many lands near the equator are hot, both in summer and in winter.

The map above, when compared with the land forms map, on pages 380-381, illustrates how much difference mountains can make in temperature. For example, the Andes Mountains of South America follow the Pacific coast, almost exactly where cooler lands appear on this map.

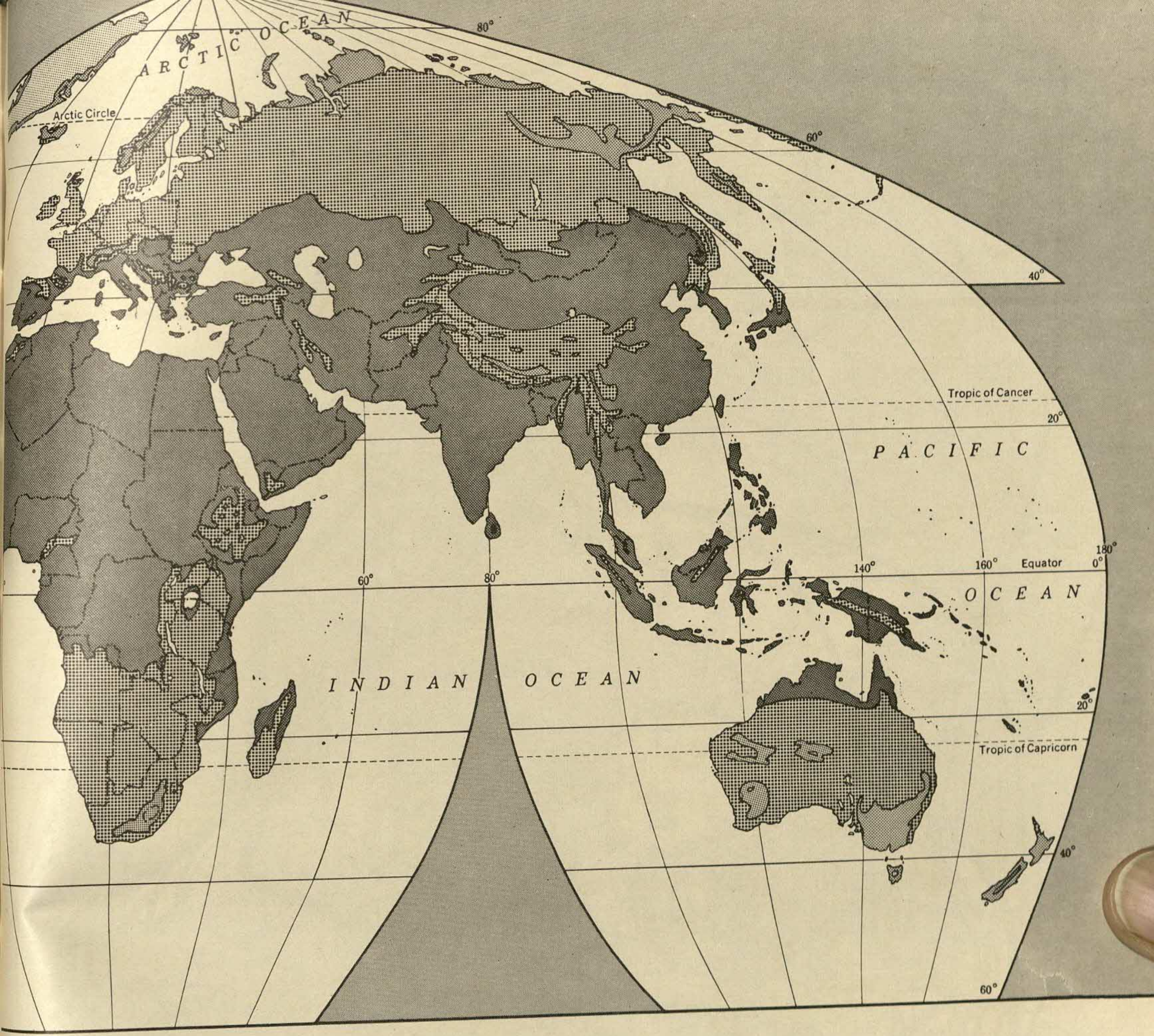
As you have learned, everywhere in the world the air tends to get cooler and cooler as one gets higher and higher above sea level. Many of the peaks in the Andes and other mountain ranges in the world are high enough so that they are covered with snow and ice all through the year.



A world view of temperatures in July. To the people north of the equator, July is a summer month. The noon sun is then almost overhead at the Tropic of Cancer. That means that it is far from overhead in Argentina, for example, or in Australia. Therefore, July is a summer month in the United States, in Europe, and in other lands north of the equator, but it is a winter month in lands that lie south of the equator. For when the noon sun is high in the sky, as it is in July in the United States, the weather is much warmer than when it is low in the sky.

The map above shows that in July, hot weather extends almost to the northern border of the United States, and warm weather reaches nearly to the Arctic Ocean. At the same time, cool weather has spread northward from the Antarctic to small areas in southern South America, Africa, and Australia.

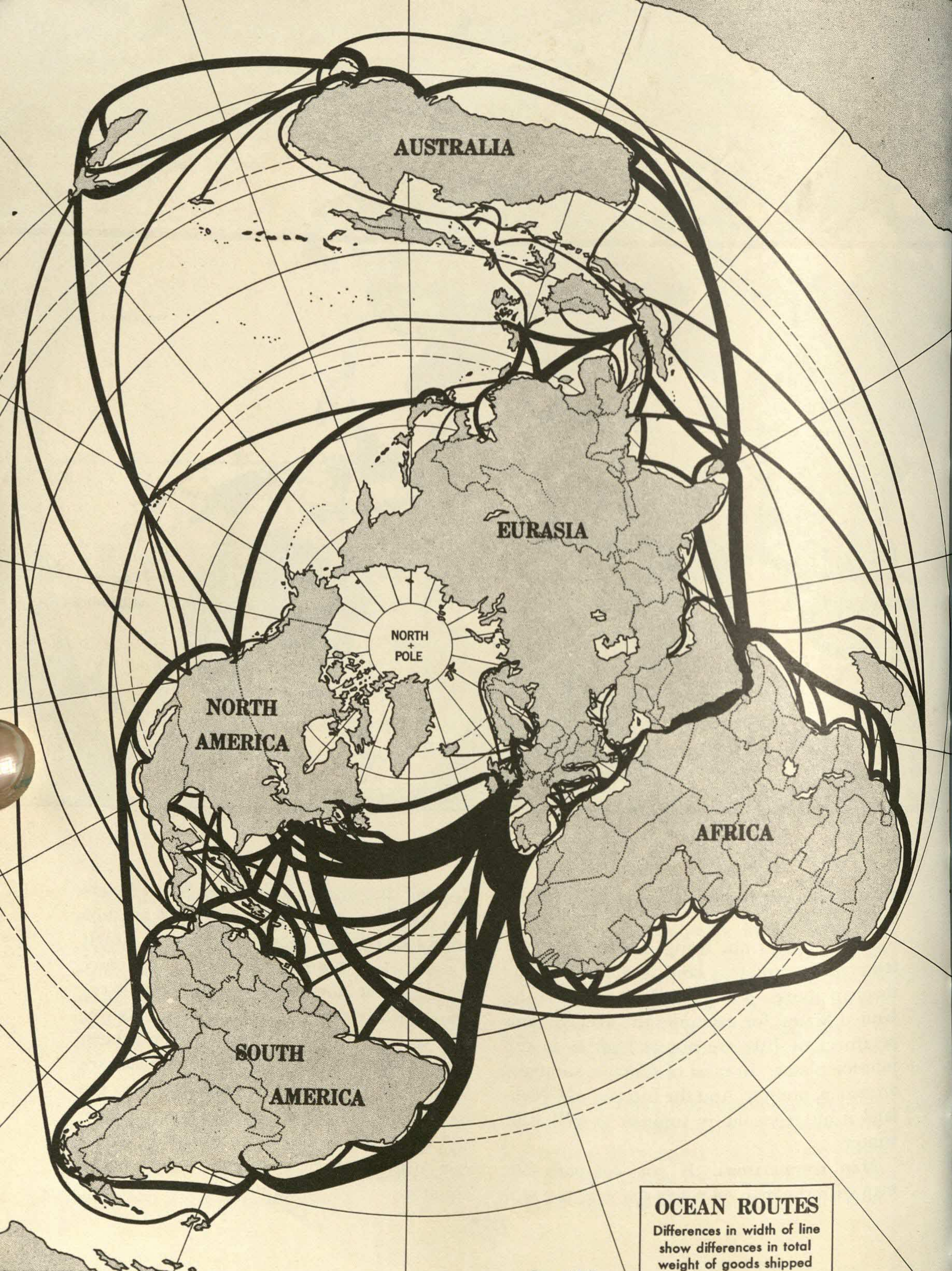
Therefore, when it is summer north of the equator, it is winter south of the equator. And as the map on pages 374-375 shows, when it is summer south of the equator, it is winter north of the equator. You can read more



about these "seasons turned around" on pages 67-68.

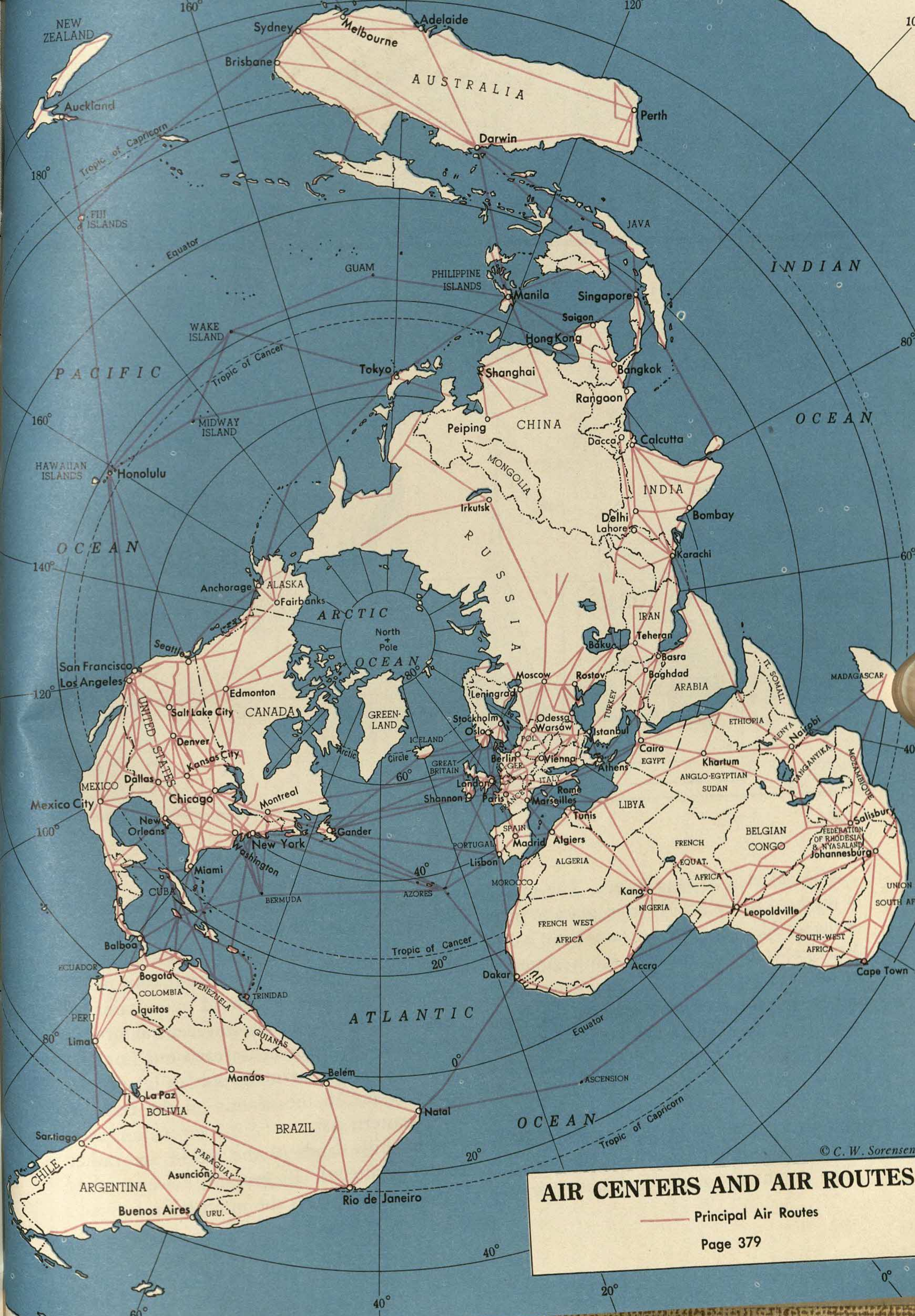
Summer does not bring exactly the same temperatures to every land, as you can see by the map above. Along the Pacific coast of the United States, for example, the average temperatures in July are not as high as in the interior plains. In most of Canada, summers are warm, not hot. And the interior of Greenland is bitterly cold, in summer as well as in winter.

Map comparisons. If you compare this map with the map on pages 374-375, you will discover that winters in southern South America, southern Africa, and Australia are not nearly so cold as those in northern North America and northern Eurasia. The chief reason is that North America and Eurasia extend much farther from the equator. As you can see on the map above, the northern coasts of North America and Eurasia are about 70° north of the equator. But the southern tip of South America is only about 55° south of the equator, and neither Africa nor Australia reach as far as 40° south of the equator.



OCEAN ROUTES

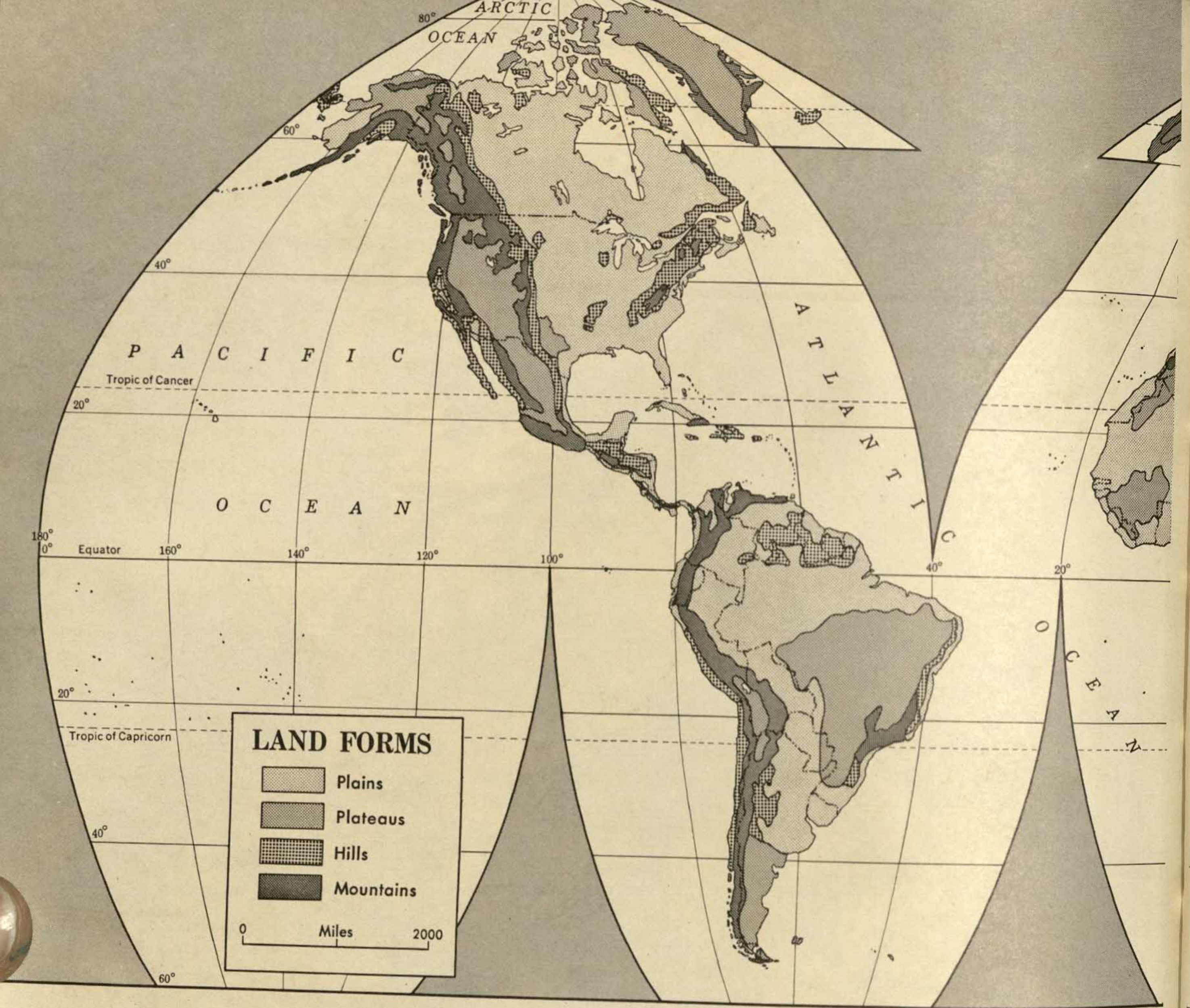
Differences in width of line show differences in total weight of goods shipped



AIR CENTERS AND AIR ROUTES

Principal Air Routes

Page 379

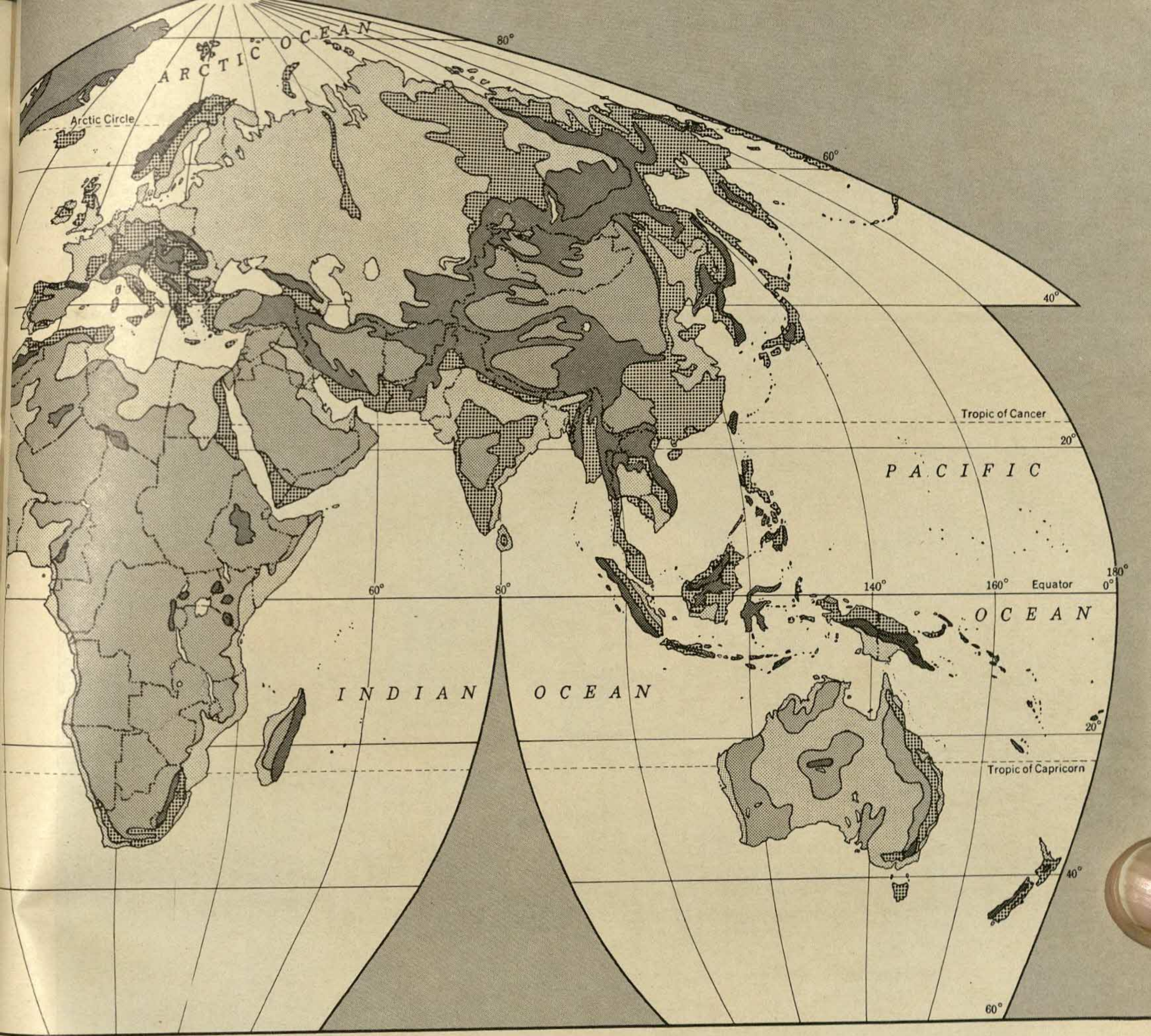


A world view of land forms. The surface of the land varies greatly from place to place in the world. The greatest plains lie in North America and Eurasia. In South America, Africa, and Australia, the plains are smaller and broken up more by other land forms.

Africa is the plateau continent. Nowhere else in the world are there such vast plateau lands. Actually the plateaus fill the greater part of Africa. Other extensive plateaus are in western United States, eastern South America, and in middle eastern Eurasia.

The mountains of the world are remarkably concentrated. One broad mountain belt reaches almost continuously from Alaska to the southern tip of South America, along the Pacific side of the American continents. There is another group of mountains in middle Eurasia. From this central group, irregular mountain belts reach out in three directions, to western Europe, to far eastern Siberia, and to the islands off the coast of southeastern Asia.

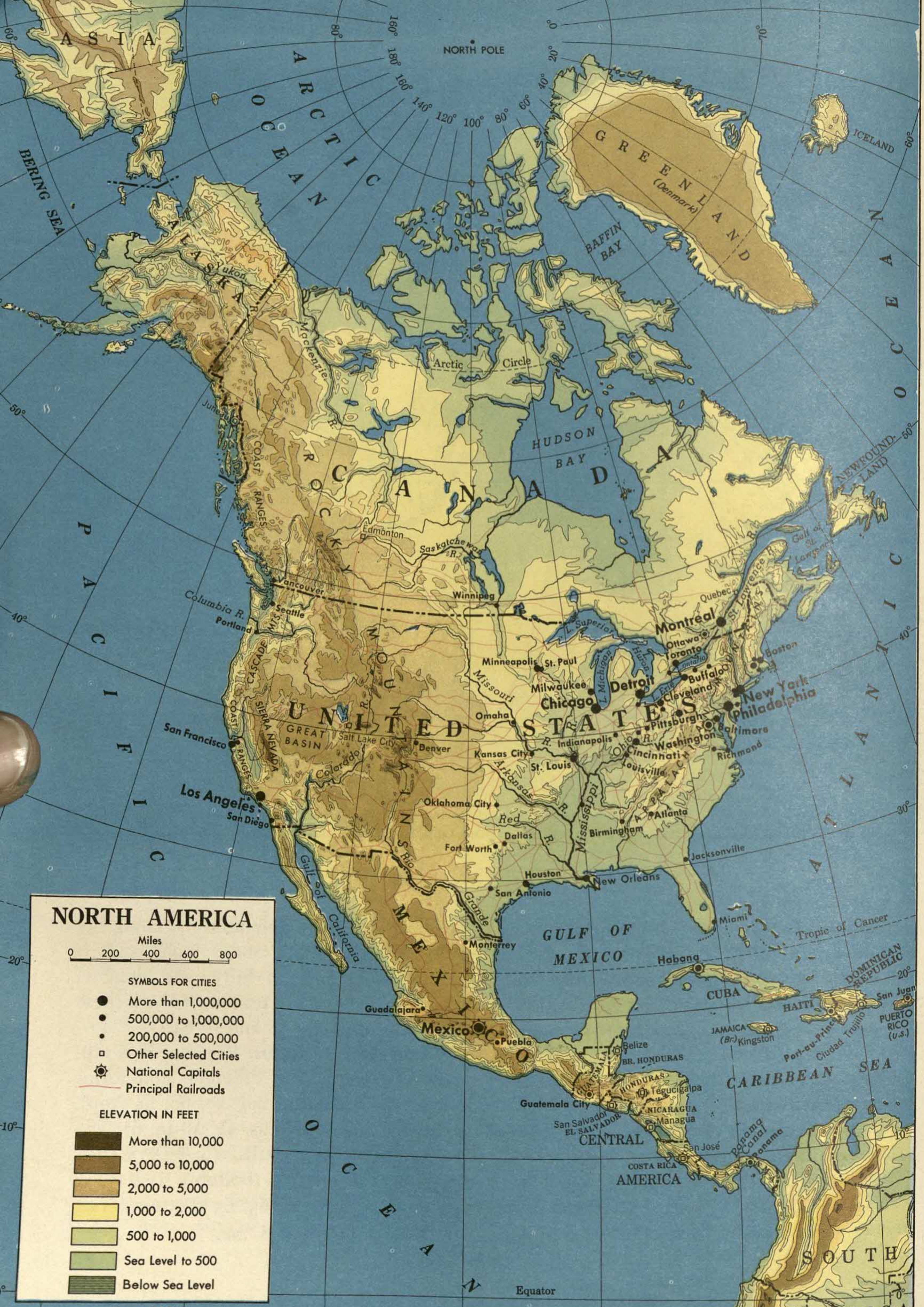
The hilly lands of the world are rather widely scattered. In general, however, they tend to appear near the mountains.



Comparisons. In using this map, it is important to keep in mind that it does not show the same kinds of things as the colored maps of the continents which appear in the atlas. On the map of North America, for example, page 382, the different colors show how high the land is above sea level. These colors do *not* show the shape of the surface of the land, whether it is a plain or a plateau, hilly land or mountainous land.

As you can tell by comparing the land forms map with the colored maps of the continents, some low land is level; some is hilly; and some is even mountainous, as along the coast of Greenland. Some high land is plateau land; some is hilly; and some is mountainous. You can read more about these differences on pages 16 and 61-64.

Pictures of land forms. You may find representative pictures of different land forms as follows: Plains, 44, 50, 57, 60, 65 (top), 76, 81, 88, 107. Plateaus, 43, 48-49, 61, 273 (bottom), 282, 342. Hills, 20, 62, 78 (bottom), 90 (bottom), 99 (bottom), 133 (top), 303, 355. Mountains, 63, 65 (bottom), 128, 147 (top), 228, 283, 318, 323.



NORTH AMERICA

Miles

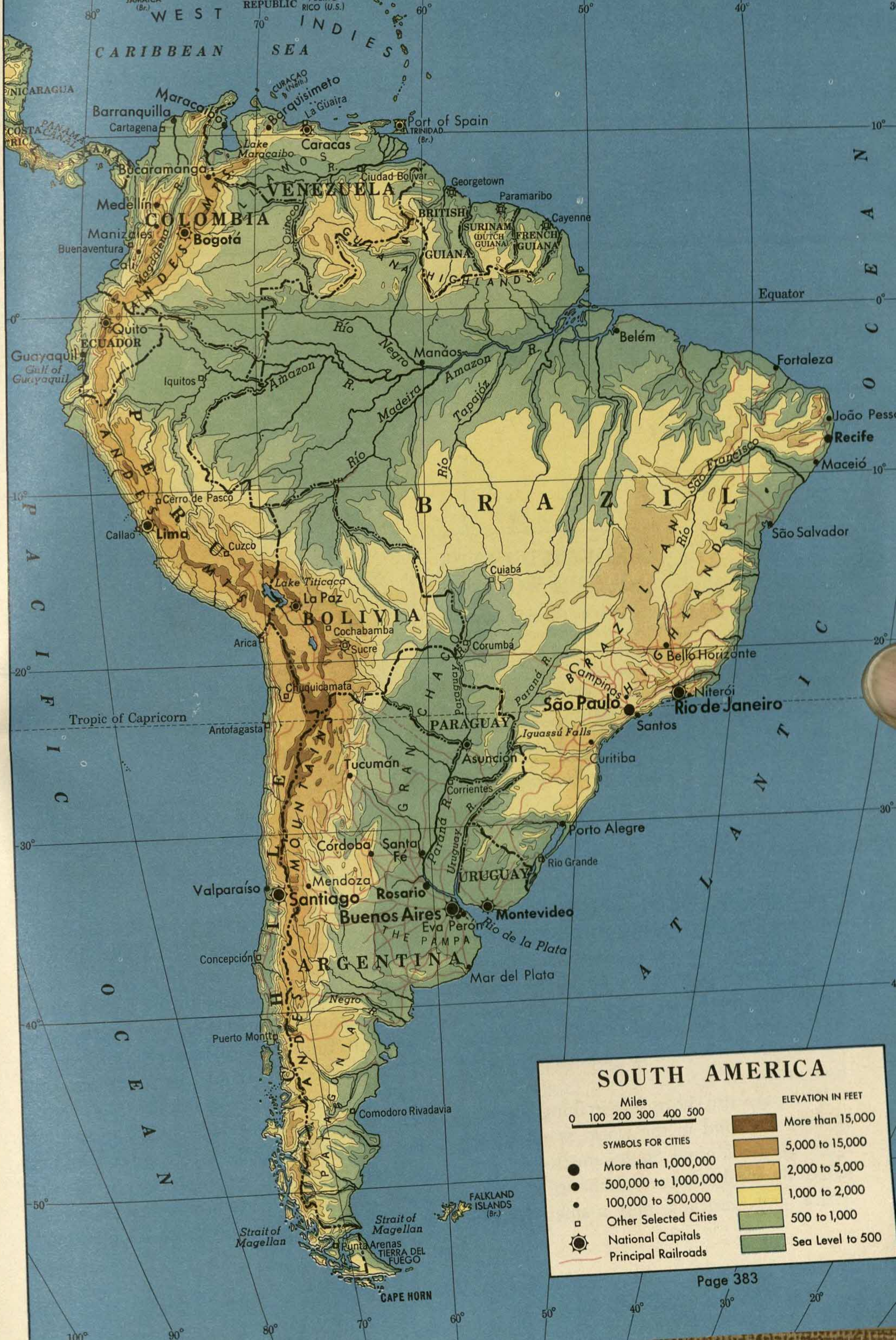
0 200 400 600 800

SYMBOLS FOR CITIES

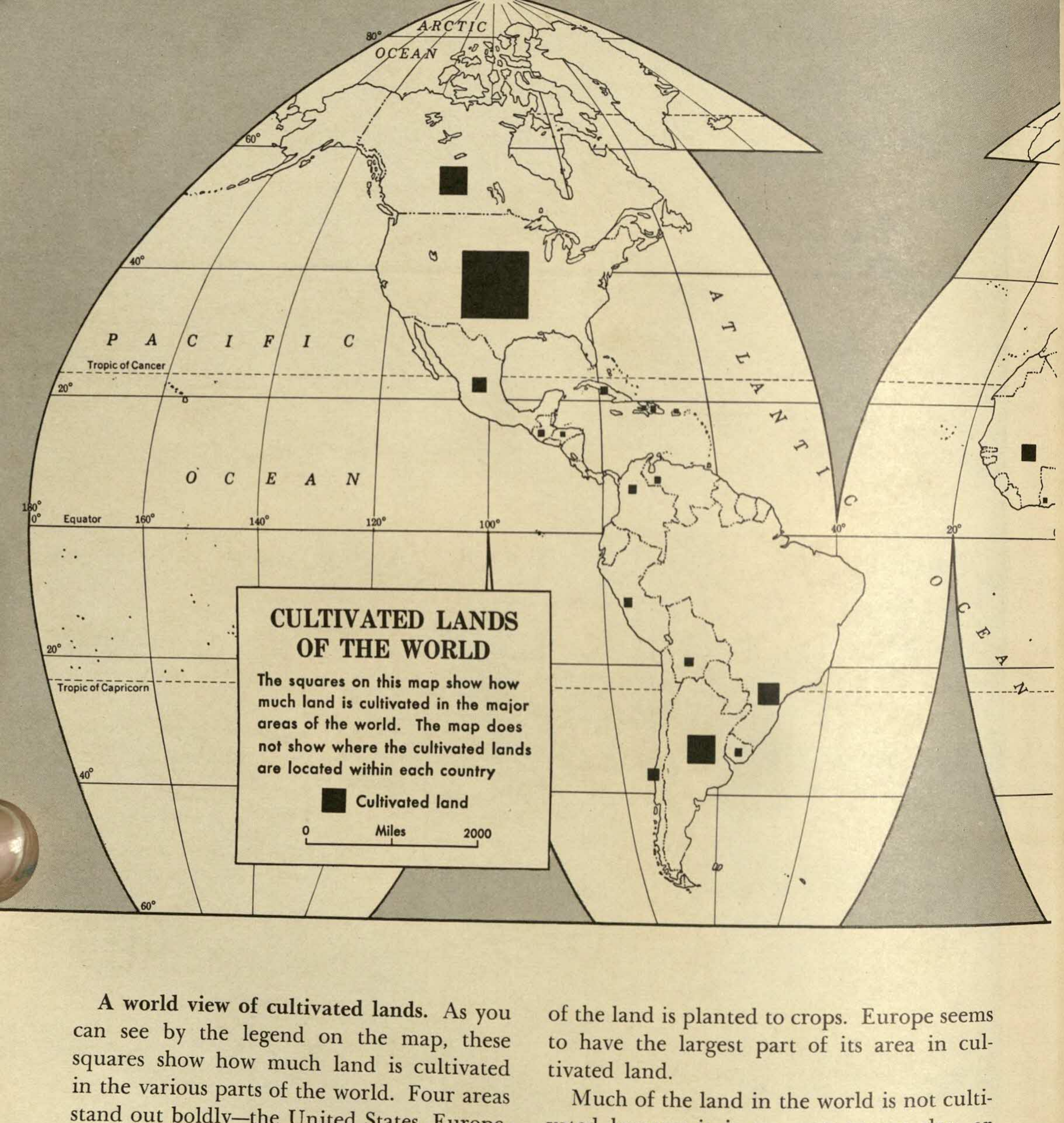
- ● More than 1,000,000
- • 500,000 to 1,000,000
- · 200,000 to 500,000
- ▫ Other Selected Cities
- ⊛ National Capitals
- — Principal Railroads

ELEVATION IN FEET

- More than 10,000
- 5,000 to 10,000
- 2,000 to 5,000
- 1,000 to 2,000
- 500 to 1,000
- Sea Level to 500
- Below Sea Level



SOUTH AMERICA

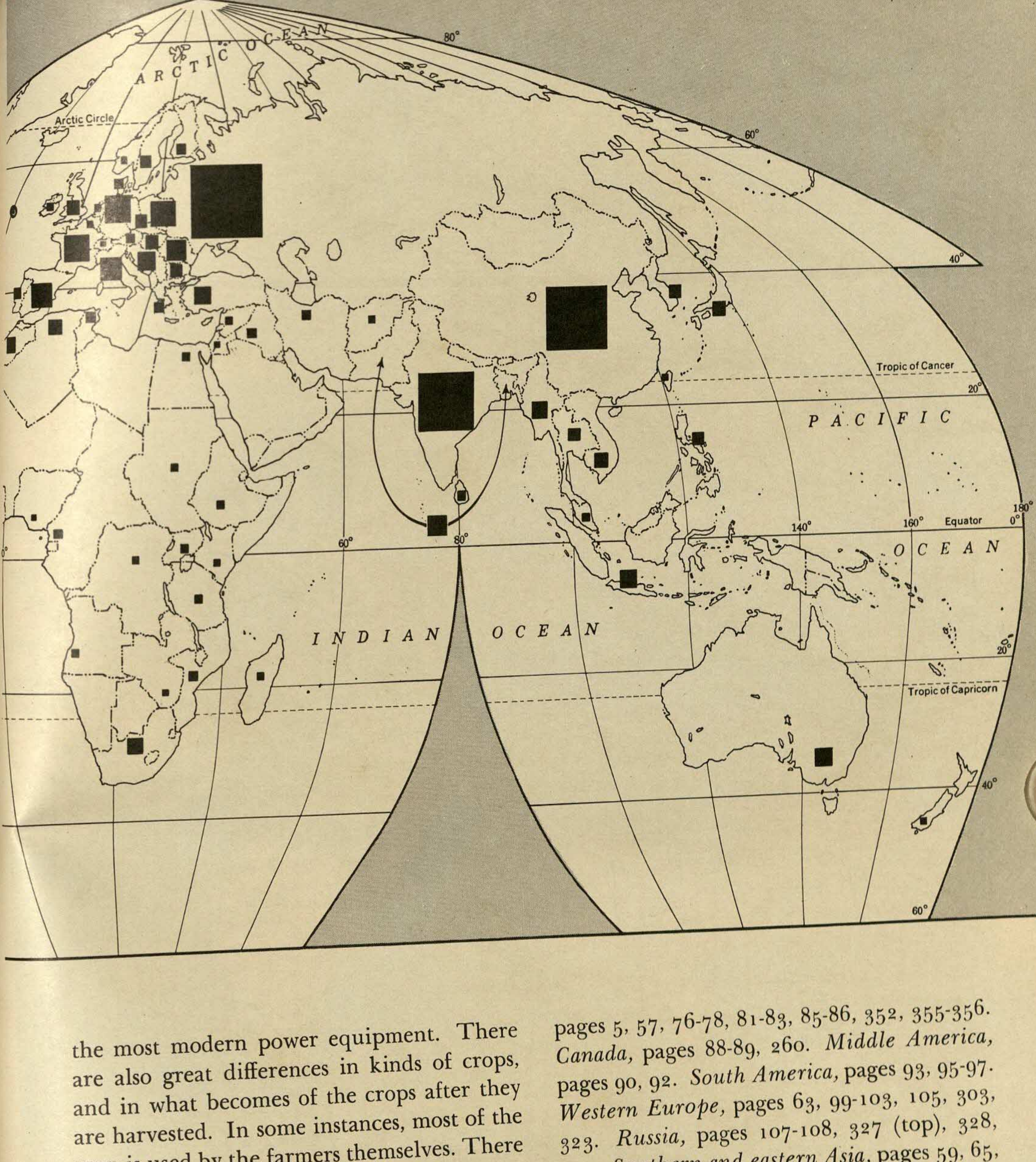

ARCTIC OCEAN
80°
60°
40°
20°
PACIFIC OCEAN
ATLANTIC OCEAN
Tropic of Cancer
Equator
Tropic of Capricorn
180°
0°
160°
140°
120°
100°
40°
20°
CULTIVATED LANDS OF THE WORLD
The squares on this map show how much land is cultivated in the major areas of the world. The map does not show where the cultivated lands are located within each country
Cultivated land
0
Miles
2000

A world view of cultivated lands. As you can see by the legend on the map, these squares show how much land is cultivated in the various parts of the world. Four areas stand out boldly—the United States, Europe, India, and China. A great part of the food which the world uses is produced in these four areas.

This map also shows in a striking way how little of the land in the world is cultivated. Even in the United States, much less than half of the land is farmed. In South America, Africa, and Australia, only a small fraction of the land is planted to crops. Europe seems to have the largest part of its area in cultivated land.

Much of the land in the world is not cultivated because it is too wet, or too dry, or too cold. In many areas the soil is not good, or there is no soil at all. In many parts of the world good transportation is lacking; or men have not yet needed to use the soil, or have not yet learned how to use it.

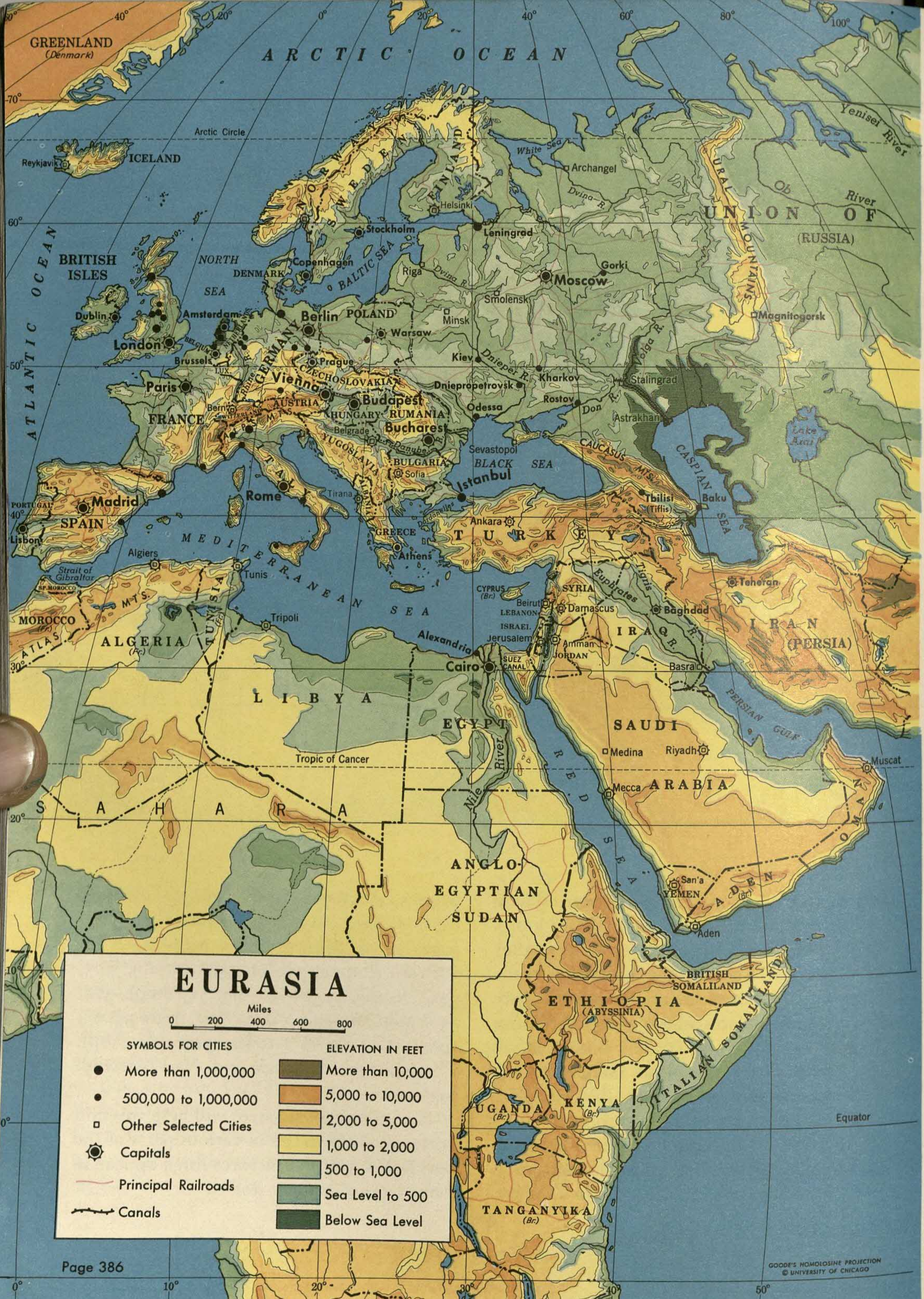
There are enormous differences in the way the land is cultivated in different areas. Some farmers use simple hand tools. Others have

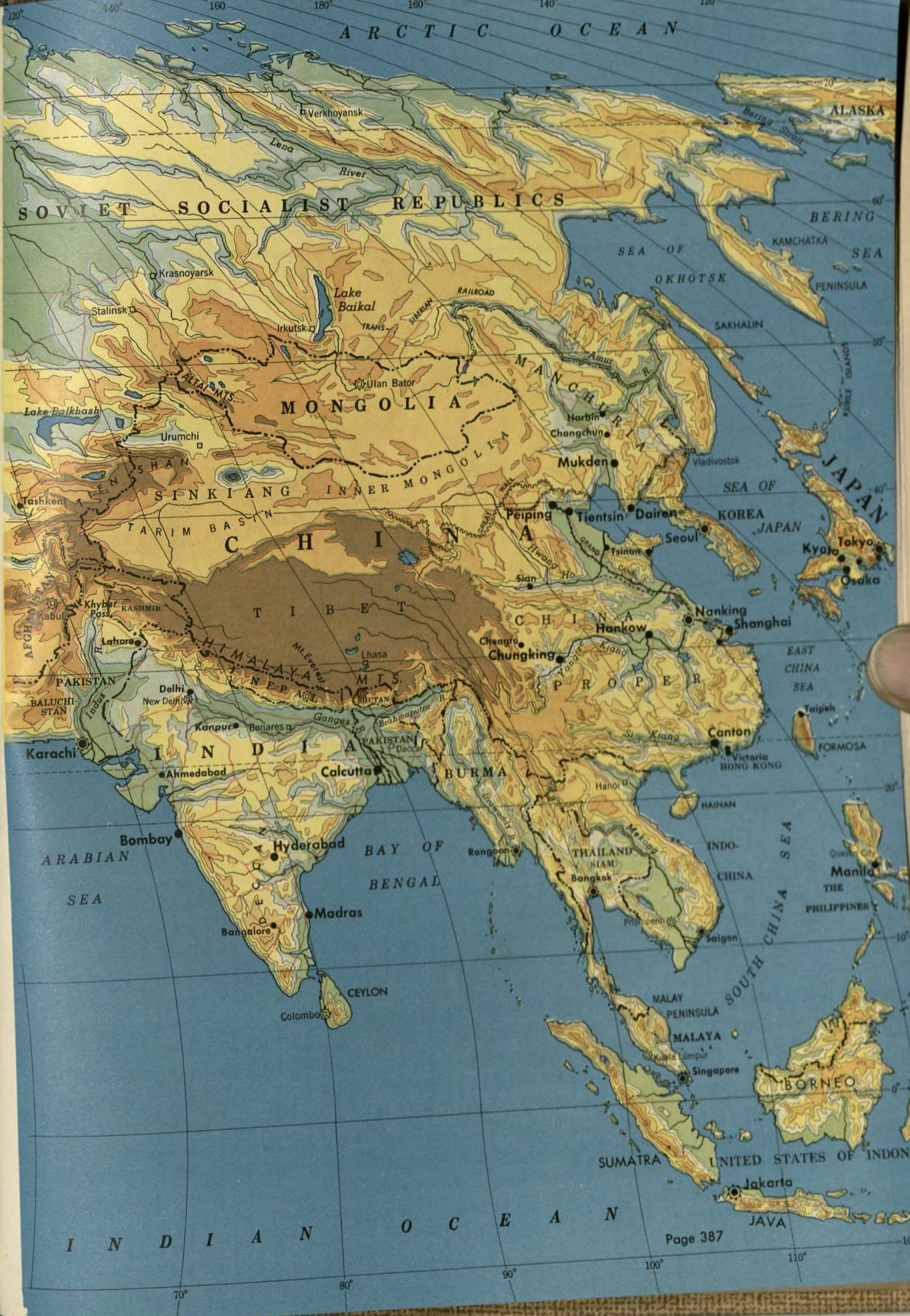


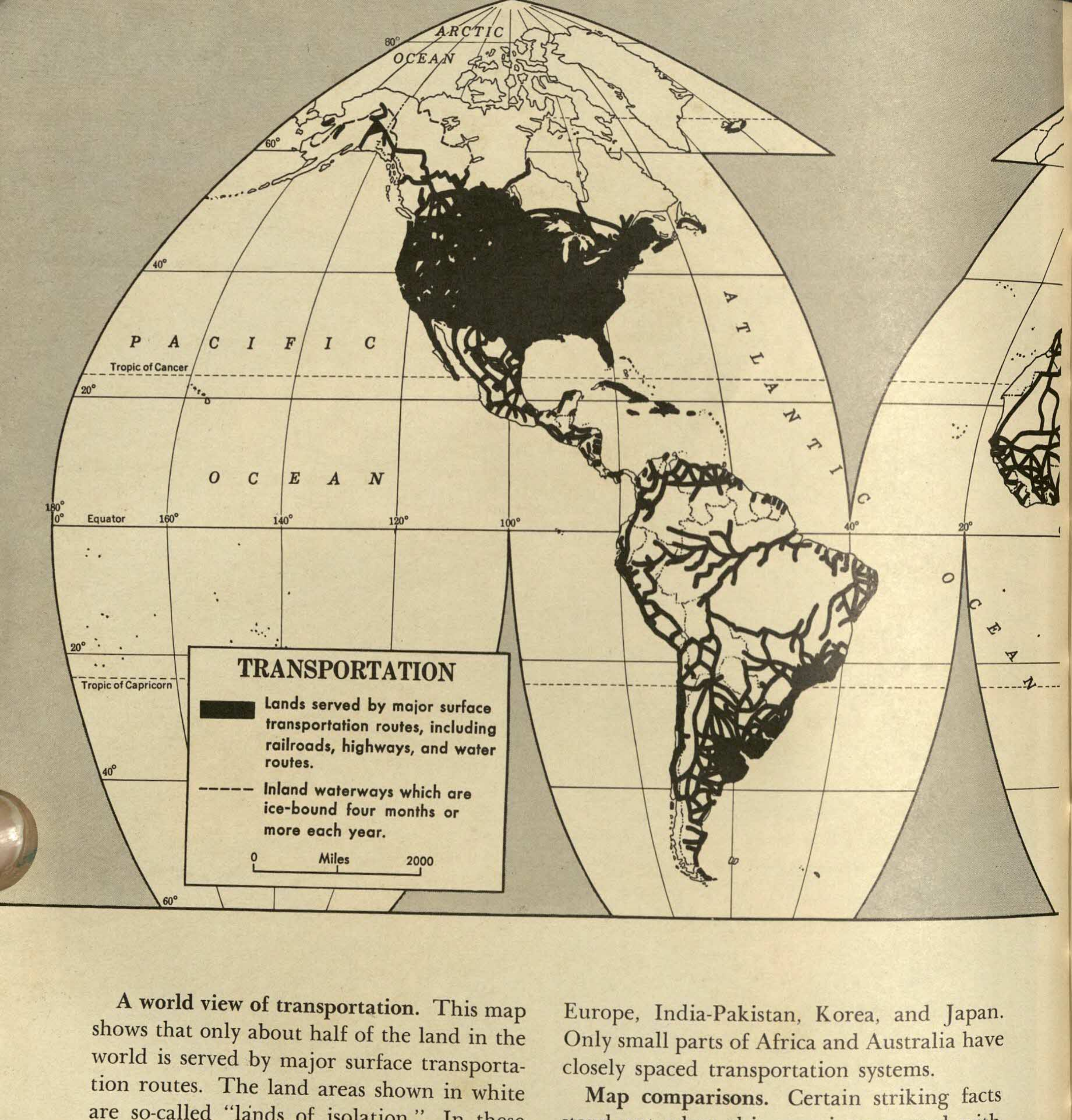
the most modern power equipment. There are also great differences in kinds of crops, and in what becomes of the crops after they are harvested. In some instances, most of the crop is used by the farmers themselves. There also are many places where nearly the entire crop is sold, and the farmers buy in stores nearly everything they need, including food.

Pictures of farmers at work. Pictures showing farm life and work appear on many pages in this book. Selections representing each continent and the major countries appear on the following pages: *The United States,* pages 5, 57, 76-78, 81-83, 85-86, 352, 355-356. *Canada,* pages 88-89, 260. *Middle America,* pages 90, 92. *South America,* pages 93, 95-97. *Western Europe,* pages 63, 99-103, 105, 303, 323. *Russia,* pages 107-108, 327 (top), 328, 330. *Southern and eastern Asia,* pages 59, 65, 109, 111, 113-116. *Africa,* pages 65 (top), 118-120, 342. *Australia and New Zealand,* page 121.

The Index (pp. 401-410) will help you find stories about farm life in various parts of the world. Many of the pictures listed appear in connection with these stories.


EURASIA
Miles
0
200
400
600
800
SYMBOLS FOR CITIES
● More than 1,000,000
• 500,000 to 1,000,000
□ Other Selected Cities
Capitals
Principal Railroads
Canals
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
Below Sea Level
ARCTIC OCEAN
GREENLAND (Denmark)
ICELAND
Reykjavik
Arctic Circle
ATLANTIC OCEAN
BRITISH ISLES
Dublin
London
NORTH SEA
DENMARK
Copenhagen
NORWAY
SWEDEN
Stockholm
FINLAND
Helsinki
BALTIC SEA
Riga
White Sea
Archangel
Dvina R.
Leningrad
Moscow
Gorki
Smolensk
Minsk
POLAND
Warsaw
Berlin
GERMANY
Amsterdam
BELGIUM
Brussels
LUX.
Paris
FRANCE
Prague
CZECHOSLOVAKIA
Vienna
AUSTRIA
Budapest
HUNGARY
RUMANIA
Bucharest
Bern
SWITZERLAND
ALPS MTS.
Belgrade
YUGOSLAVIA
Danube
BULGARIA
Sofia
Tirana
ALBANIA
ITALY
Rome
GREECE
Athens
PORTUGAL
Lisbon
SPAIN
Madrid
Strait of Gibraltar
SP. MOROCCO
MOROCCO (Fr.)
ATLAS MTS.
ALGERIA (Fr.)
Algiers
TUNISIA (Fr.)
Tunis
Tripoli
MEDITERRANEAN SEA
LIBYA
EGYPT
Alexandria
Cairo
SUEZ CANAL
Nile River
Tropic of Cancer
SAHARA
ANGLO-EGYPTIAN SUDAN
RED SEA
Kiev
Dnieper R.
Kharkov
Dniepropetrovsk
Odessa
Sevastopol
BLACK SEA
Istanbul
Ankara
TURKEY
CYPRUS (Br.)
Rostov
Don R.
Stalingrad
Volga R.
Astrakhan
CAUCASUS MTS.
Tbilisi (Tiflis)
Baku
CASPIAN SEA
UNION OF (RUSSIA)
URAL MOUNTAINS
Magnitogorsk
Ob River
Yenisei River
Lake Aral
SYRIA
Beirut
LEBANON
Damascus
ISRAEL
Jerusalem
Amman
JORDAN
Euphrates R.
Tigris R.
IRAQ
Baghdad
Basra
Teheran
IRAN (PERSIA)
PERSIAN GULF
SAUDI ARABIA
Medina
Riyadh
Mecca
Muscat
OMAN
San'a
YEMEN
ADEN (Br.)
Aden
BRITISH SOMALILAND
ETHIOPIA (ABYSSINIA)
ITALIAN SOMALILAND
UGANDA (Br.)
KENYA (Br.)
TANGANYIKA (Br.)
Equator
GOODE'S HOMOLOSINE PROJECTION
© UNIVERSITY OF CHICAGO
70°
60°
50°
40°
30°
20°
10°
0°
40°
20°
0°
20°
40°
60°
80°
100°
10°
20°
30°
40°
50°

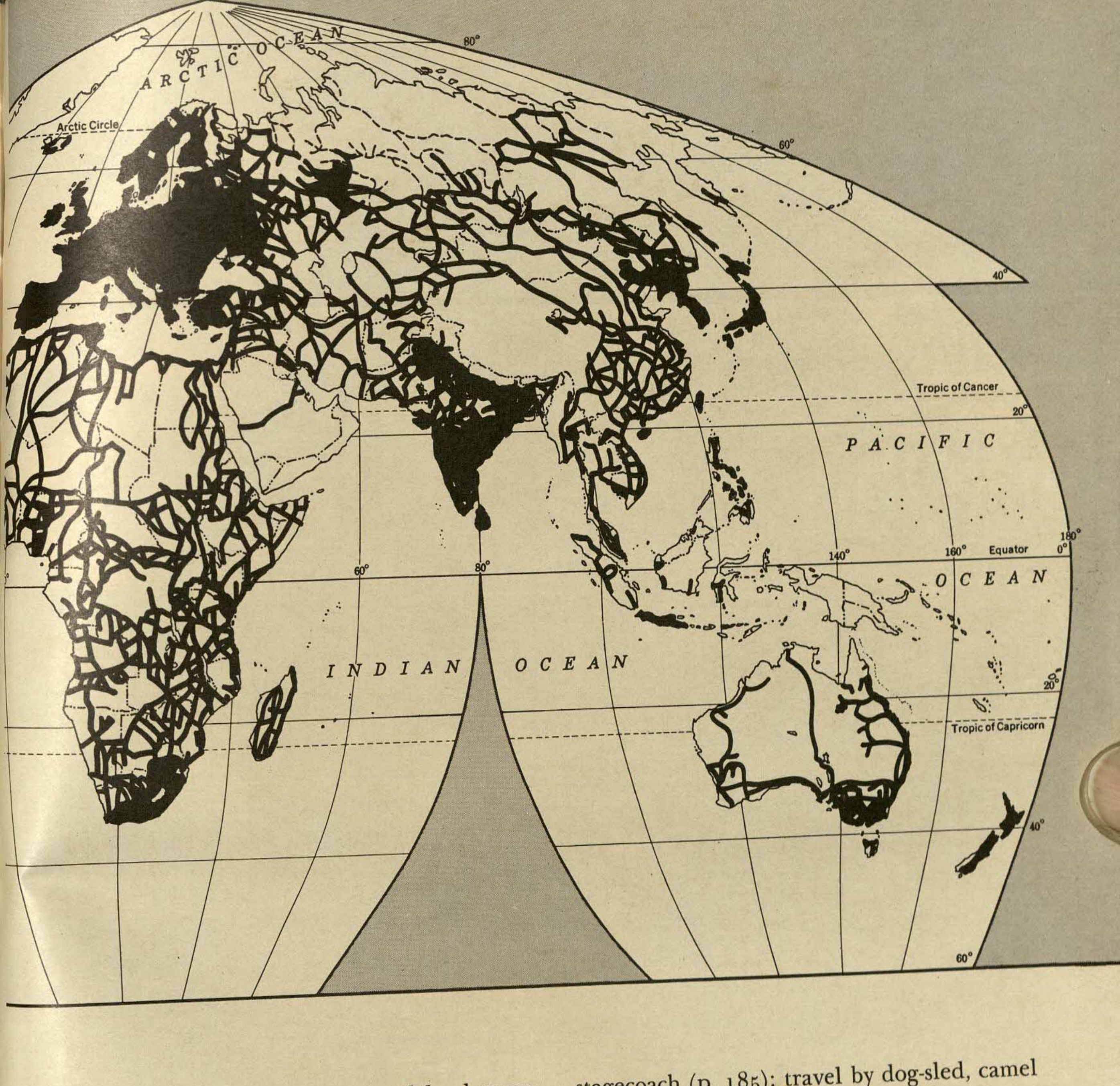

ARCTIC OCEAN
Verkhoyansk
Lena River
ALASKA
Bering Strait
SOVIET SOCIALIST REPUBLICS
BERING SEA
KAMCHATKA PENINSULA
SEA OF OKHOTSK
SAKHALIN
KURILE ISLANDS
Krasnoyarsk
Stalinsk
Lake Baikal
Irkutsk
TRANS-SIBERIAN RAILROAD
Amur R.
MANCHURIA
Ulan Bator
ALTAI MTS.
MONGOLIA
Lake Balkhash
Urumchi
INNER MONGOLIA
Harbin
Changchun
Mukden
Vladivostok
JAPAN
SEA OF JAPAN
TIEN SHAN
SINKIANG
Tashkent
TARIM BASIN
CHINA
GREAT WALL
Peiping
Tientsin
Dairen
KOREA
Seoul
Tsinan
GRAND CANAL
Hwang Ho
Sian
Kyoto
Tokyo
Osaka
AFGHANISTAN
Kabul
Khyber Pass
KASHMIR
TIBET
CHINA PROPER
Nanking
Shanghai
Hankow
Chengtu
Chungking
Yangtze Kiang
EAST CHINA SEA
Lahore
Lhasa
Mt. Everest
HIMALAYA MTS.
NEPAL
BHUTAN
PAKISTAN
BALUCHISTAN
Indus
Delhi
New Delhi
Kanpur
Benares
Ganges R.
Brahmaputra R.
PAKISTAN
Dacca
Taipeh
FORMOSA
Si Kiang
Canton
Victoria
HONG KONG
Karachi
INDIA
Ahmedabad
Calcutta
BURMA
Hanoi
HAINAN
Bombay
Hyderabad
DECCAN
ARABIAN SEA
BAY OF BENGAL
Rangoon
Irrawaddy R.
THAILAND SIAM
Mekong
INDO-CHINA
SOUTH CHINA SEA
Quezon City
Manila
THE PHILIPPINES
Bangkok
Pnompenh
Saigon
Madras
Bangalore
CEYLON
Colombo
MALAY PENINSULA
MALAYA
Kuala Lumpur
Singapore
BORNEO
SUMATRA
UNITED STATES OF INDONE
Jakarta
JAVA
INDIAN OCEAN
120°
140°
160
180°
160°
140°
120
70°
60°
50°
40°
20°
10°
0°
10°
70°
80°
90°
100°
110°


ARCTIC OCEAN
80°
60°
40°
P A C I F I C
Tropic of Cancer
20°
O C E A N
180°
0°
Equator
160°
140°
120°
100°
40°
20°
ATLANTIC
OCEAN
20°
Tropic of Capricorn
40°
60°
TRANSPORTATION
■ Lands served by major surface transportation routes, including railroads, highways, and water routes.
----- Inland waterways which are ice-bound four months or more each year.
0 Miles 2000

A world view of transportation. This map shows that only about half of the land in the world is served by major surface transportation routes. The land areas shown in white are so-called "lands of isolation." In these areas, people and goods move slowly, at best. Travel by dog-sled, camel, donkey, dugout canoe, or by walking is more common than travel by train, automobile, ship, or airplane.

Good transportation reaches nearly every part of the United States and the southern margin of Canada. In Eurasia, the outstanding areas served by modern transportation are Europe, India-Pakistan, Korea, and Japan. Only small parts of Africa and Australia have closely spaced transportation systems.

Map comparisons. Certain striking facts stand out when this map is compared with the map of ocean routes (p. 378), and the map of air centers and air routes (p. 379). It is clear, for example, that the main ocean routes connect lands having the best surface transportation. It is also clear that many seacoasts are not served by ocean transportation. This is due chiefly to lack of harbors. The main air routes, like the main ocean routes, begin

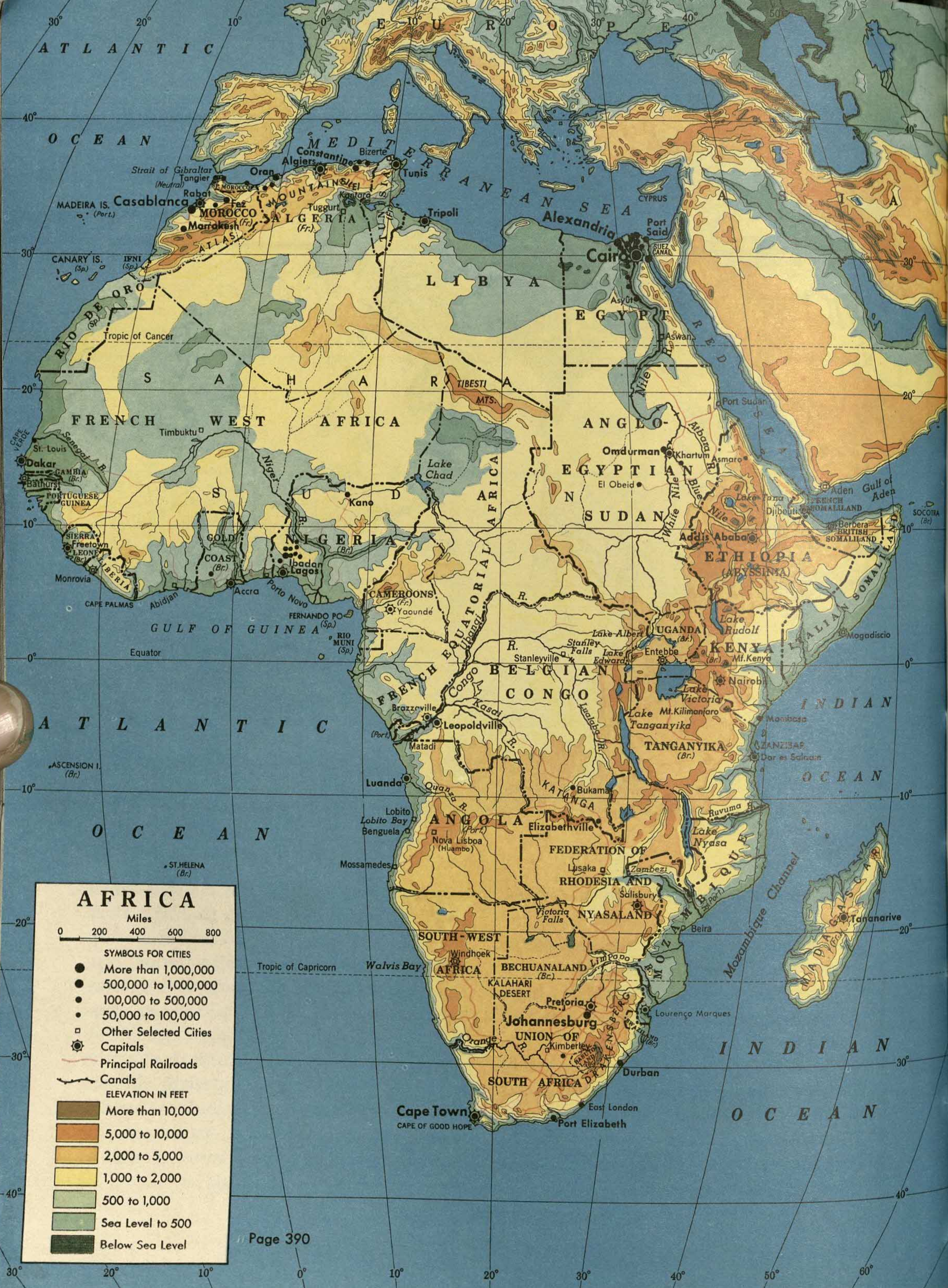


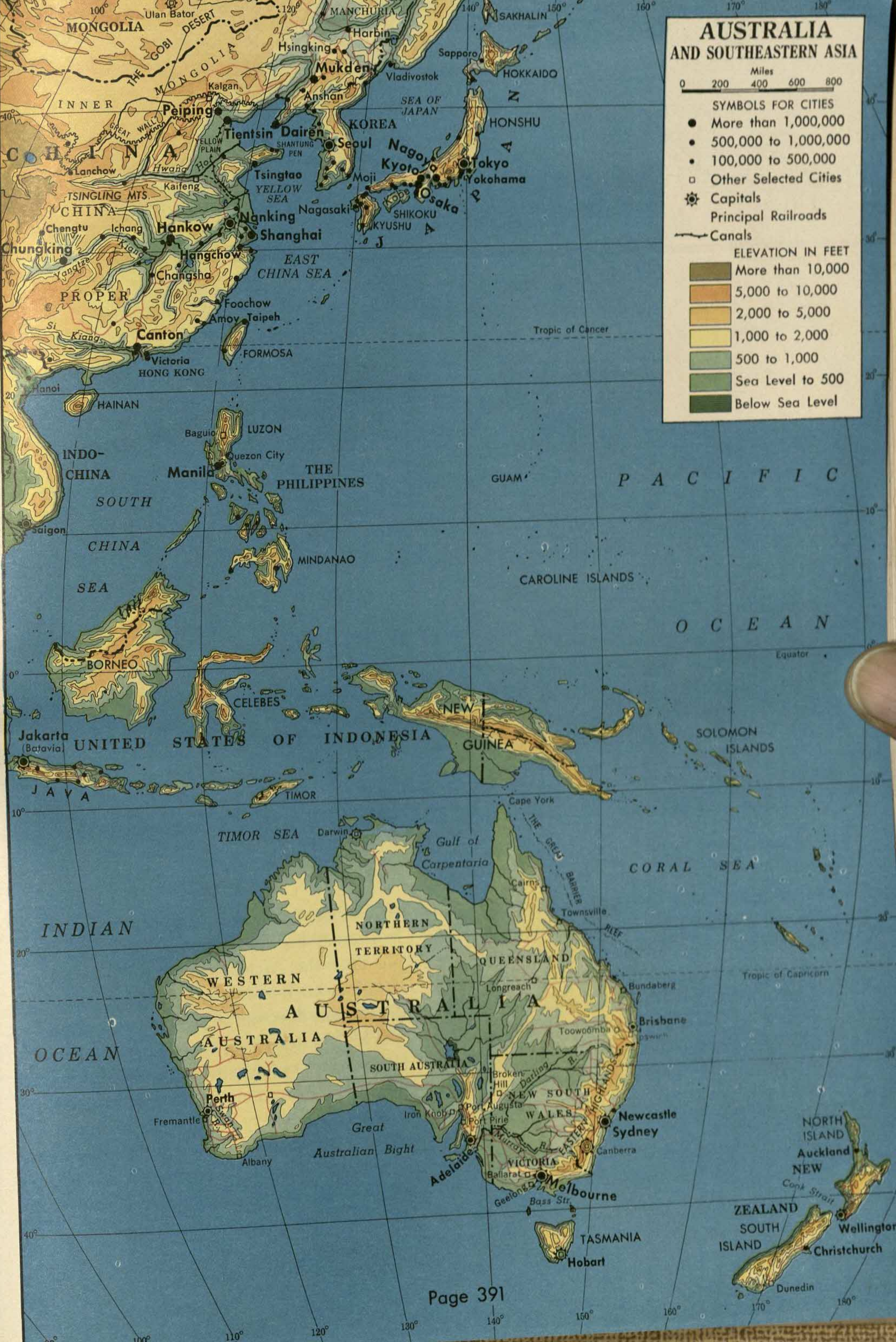
and end in areas served by good land transportation.

Two facts stand out when the map shown above is compared with the colored maps of the continents (pp. 382, 383, 386-387, 390, 391). Areas shown in solid black on this map have the better railroad networks. Areas shown in white have few, if any, railroads.

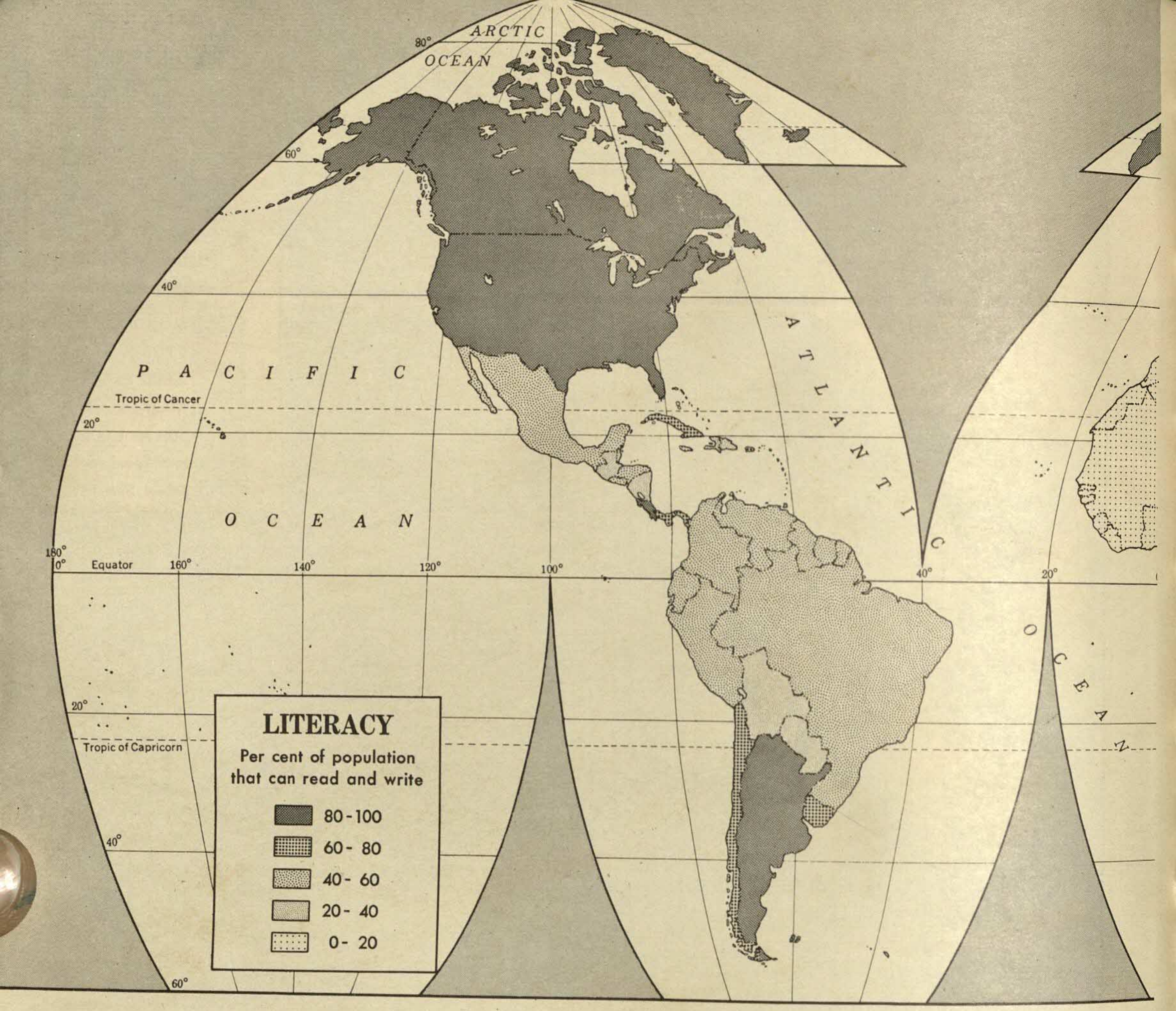
Transportation pictures. Included in this book are pictures showing almost every type of transportation and transportation work. Among them are the following: a milk truck and a freight car for hauling milk (p. 8); a stagecoach (p. 185); travel by dog-sled, camel caravan, and dugout canoe (p. 187); river boats, a lake freighter, and an ocean ship (pp. 190-191); railroad transportation (pp. 194-195); a modern bus station, a highway freighter, a bus in China (pp. 196-197); passengers and freight by air (pp. 198-200).

There are many more pictures showing the work of transportation, especially in the chapters describing the various continents, pages 226-350. The Index, pages 401-410, will help you find these pictures as well as the stories that go with them.


AFRICA
Miles
0 200 400 600 800
SYMBOLS FOR CITIES
● More than 1,000,000
● 500,000 to 1,000,000
● 100,000 to 500,000
● 50,000 to 100,000
□ Other Selected Cities
Capitals
Principal Railroads
Canals
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
Below Sea Level
E U R O P E
A S I A
ATLANTIC OCEAN
MEDITERRANEAN SEA
RED SEA
INDIAN OCEAN
GULF OF GUINEA
Gulf of Aden
Mozambique Channel
Strait of Gibraltar
Tangier (Neutral)
Rabat
Casablanca
MADEIRA IS. (Port.)
MOROCCO (Fr.)
Fez
Marrakesh
ATLAS MOUNTAINS
Oran
Algiers
Constantine
Bizerte
Tunis
Tuggurt
Kantara
ALGERIA (Fr.)
TUNISIA
Tripoli
CANARY IS. (Sp.)
IFNI (Sp.)
RIO DE ORO (Sp.)
Tropic of Cancer
LIBYA
Alexandria
Port Said
SUEZ CANAL
Cairo
CYPRUS
Asyût
EGYPT
Aswan
Nile R.
S A H A R A
TIBESTI MTS.
FRENCH WEST AFRICA
Timbuktu
CAPE VERDE
St. Louis
Senegal R.
Dakar
GAMBIA (Br.)
Bathurst
PORTUGUESE GUINEA
SIERRA LEONE (Br.)
Freetown
Monrovia
LIBERIA
CAPE PALMAS
GOLD COAST (Br.)
Abidjan
Accra
Porto Novo
Lagos
Ibadan
NIGERIA (Br.)
Niger R.
SUDAN
Kano
Lake Chad
FRENCH EQUATORIAL AFRICA
CAMEROONS (Fr.)
Yaounde
FERNANDO PO (Sp.)
RIO MUNI (Sp.)
Equator
ANGLO-EGYPTIAN SUDAN
Omdurman
Khartum
El Obeid
White Nile
Blue Nile
Atbara R.
Port Sudan
Asmara
Lake Tana
Aden
FRENCH SOMALILAND
Djibouti
SOCOTRA (Br.)
Berbera
BRITISH SOMALILAND
Addis Ababa
ETHIOPIA (ABYSSINIA)
ITALIAN SOMALILAND
Mogadiscio
Lake Rudolf
KENYA (Br.)
Mt. Kenya
Nairobi
UGANDA (Br.)
Entebbe
Lake Albert
Lake Edward
Stanley Falls
Stanleyville
Ubangi R.
Congo R.
BELGIAN CONGO
Lake Victoria
Mt. Kilimanjaro
Mombasa
ZANZIBAR
Dar es Salaam
Lake Tanganyika
TANGANYIKA (Br.)
Brazzaville
Leopoldville
Kasai R.
Lualaba R.
Matadi
ASCENSION I. (Br.)
Luanda
Cuanza R.
Lobito
Lobito Bay
Benguela
ANGOLA (Port.)
Nova Lisboa (Huambo)
Mossamedes
KATANGA
Bukama
Elizabethville
Ruvuma R.
Lake Nyasa
FEDERATION OF RHODESIA AND NYASALAND
Lusaka
Zambezi R.
Salisbury
Victoria Falls
MOZAMBIQUE (Port.)
Beira
MADAGASCAR (Fr.)
Tananarive
ST. HELENA (Br.)
SOUTH-WEST AFRICA
Windhoek
Walvis Bay
Tropic of Capricorn
BECHUANALAND (Br.)
KALAHARI DESERT
Limpopo R.
Pretoria
Johannesburg
Lourenço Marques
SWAZILAND (Br.)
BASUTOLAND
Orange R.
Kimberley
DRAKENSBERG
UNION OF SOUTH AFRICA
Durban
East London
Port Elizabeth
Cape Town
CAPE OF GOOD HOPE
30° 20° 10° 0° 10° 20° 30° 40° 50° 60°
40° 30° 20° 10° 0° 10° 20° 30° 40°



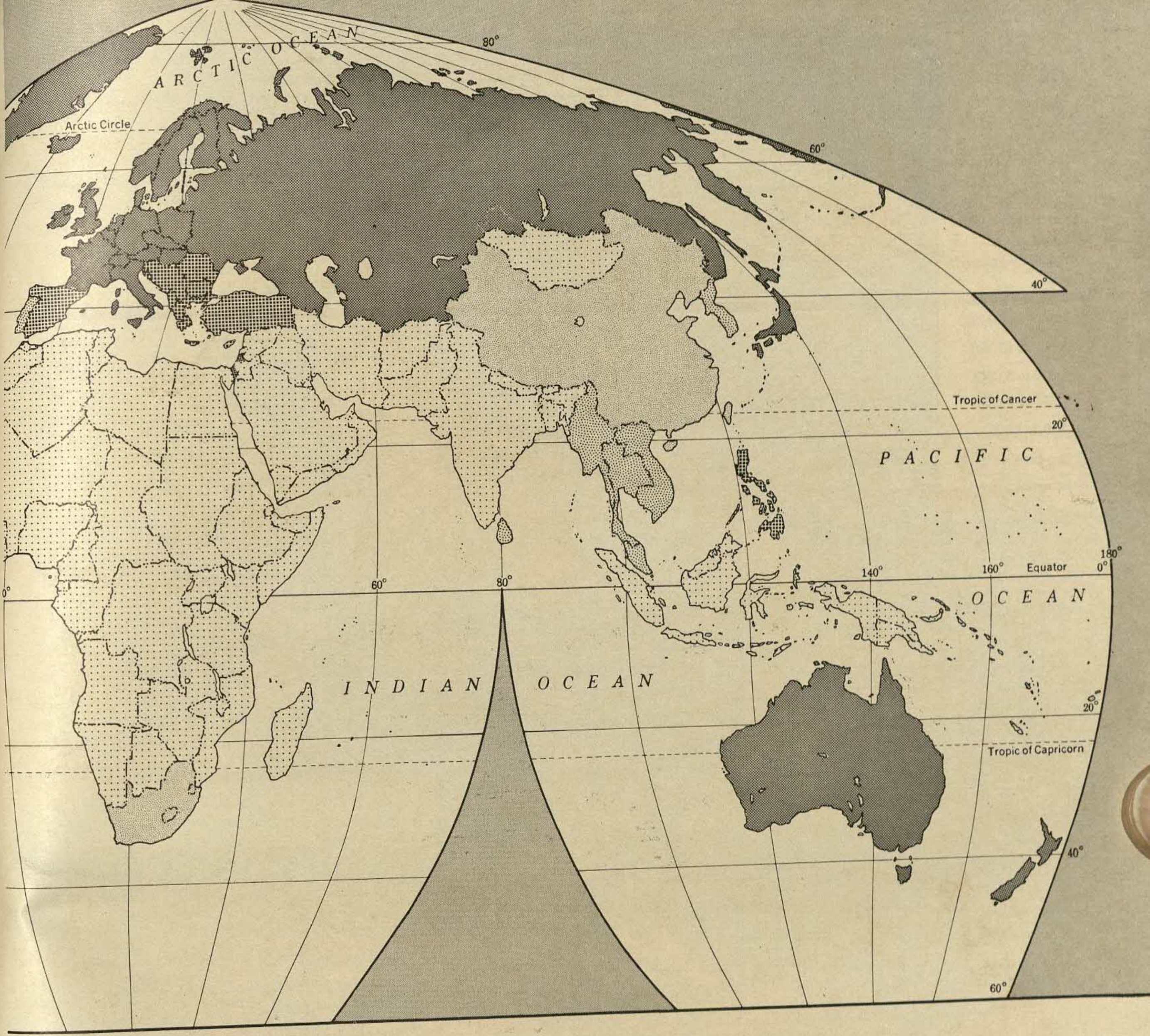
AUSTRALIA
AND SOUTHEASTERN ASIA



A world view of literacy. No one can measure exactly how well educated a person is. In general, however, we may take for granted that a person who can read and write is better educated than one who cannot read and write. So with nations, we can assume that progress in literacy means some progress in education. The map above, therefore, suggests how the various lands rank with regard to education.

On this map, each country is considered as a whole. That is, the map does not show the differences in literacy within a nation. In Canada, for example, there are differences in literacy between some of the Eskimo people near the Arctic Ocean and some of the people who live in the big cities. But this distinction does not appear on the map.

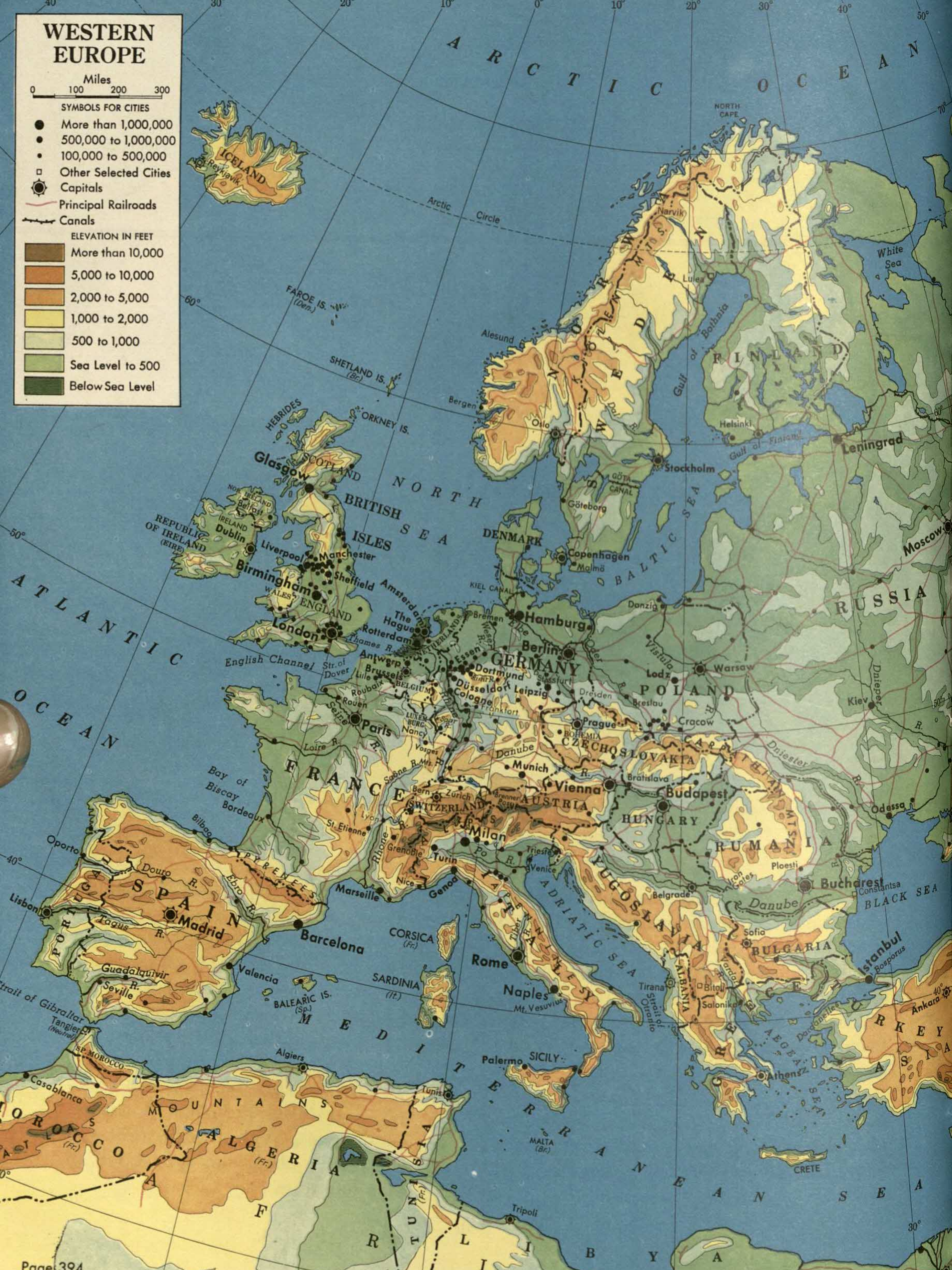
This pattern of literacy is constantly changing. Ten years from now there may be several more nations in the top rank, where at least 80 in every 100 people can read and write. Probably no nation will move a step downward. For all around the world, people are discovering the great importance of education. There may be handicaps that hold

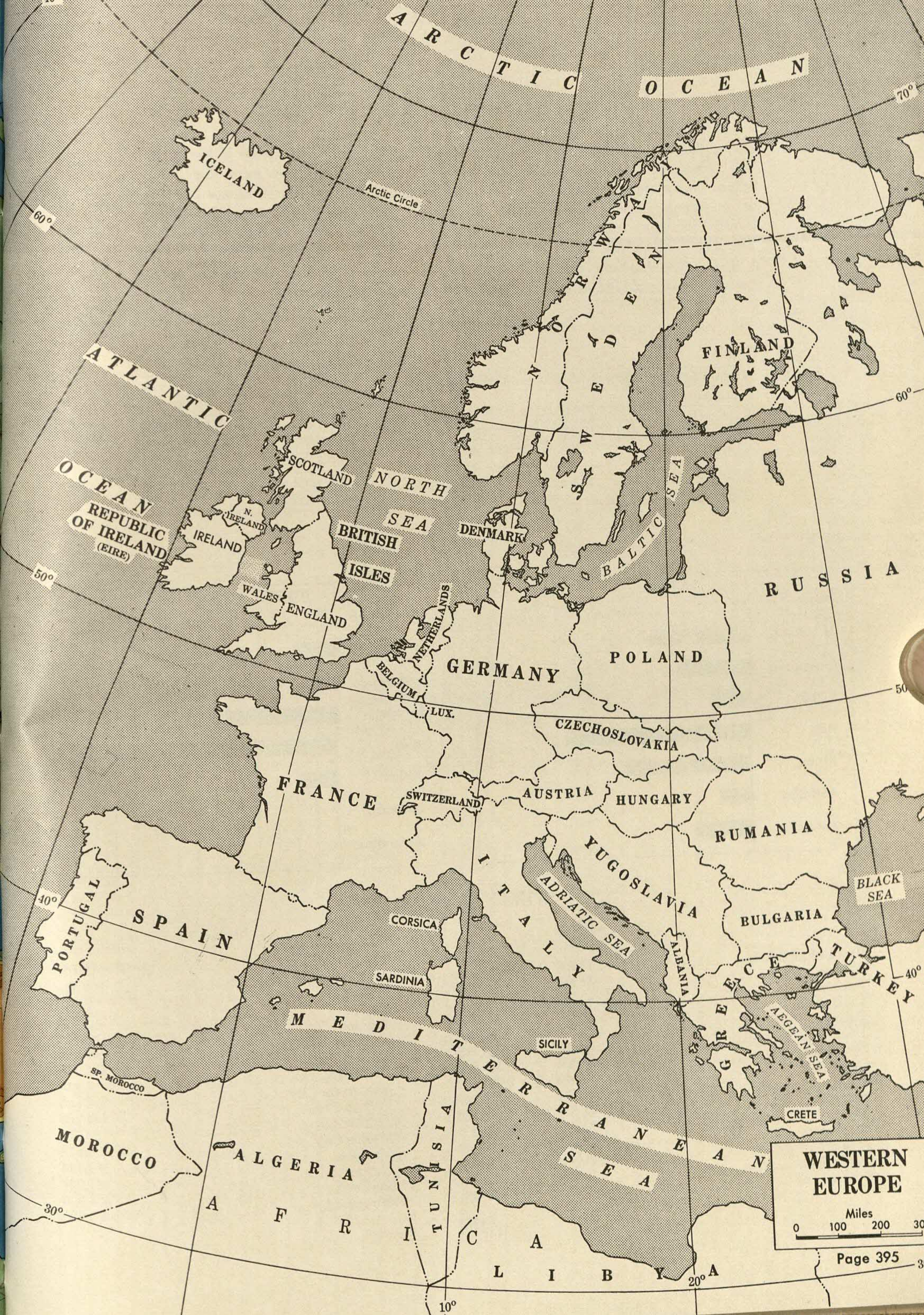


back education. Nevertheless the world as a whole is moving forward and upward, instead of backward, in literacy.

Most countries have learned that as literacy increases, there are other gains that go along with it. With greater knowledge and better communications, people can more easily take part in government. They can learn of ways to improve their health. They can learn of better ways of working, so that probably their income will be increased. This, in turn, will help them get the medicines they need, and will help support more schools. The results are far reaching, therefore, when nations improve their standing in literacy.

Pictures. The following pictures show a few of the many thousands of places in the world, where the work of education goes on: a United States government school in Alaska, page 206; a boy's school in Africa, page 208 (top); a library in southern Asia, page 207; university students in Asia, page 208 (middle); and an agricultural school in Honduras, page 208 (bottom). With these pictures, you will find a story about the special service workers in education.


WESTERN EUROPE
Miles
0
100
200
300
SYMBOLS FOR CITIES
● More than 1,000,000
• 500,000 to 1,000,000
• 100,000 to 500,000
□ Other Selected Cities
Capitals
Principal Railroads
Canals
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
Below Sea Level
ARCTIC OCEAN
NORTH CAPE
Arctic Circle
ICELAND
Reykjavik
FAROE IS. (Den.)
SHETLAND IS. (Br.)
ORKNEY IS.
HEBRIDES
White Sea
Narvik
Lulea
Gulf of Bothnia
NORWAY
KJOLEN MTS.
SWEDEN
FINLAND
Alesund
Bergen
Oslo
Dal R.
Helsinki
Gulf of Finland
Leningrad
Stockholm
GÖTA CANAL
Göteborg
BALTIC SEA
DENMARK
Copenhagen
Malmö
Moscow
RUSSIA
SCOTLAND
Glasgow
NORTH SEA
BRITISH ISLES
NORTHERN IRELAND
Belfast
IRELAND
REPUBLIC OF IRELAND (EIRE)
Dublin
Liverpool
Manchester
Sheffield
Birmingham
WALES
ENGLAND
London
Thames R.
Amsterdam
The Hague
Rotterdam
NETHERLANDS
KIEL CANAL
Bremen
Hamburg
Elbe
Weser
Danzig
Berlin
Oder
Vistula
Warsaw
GERMANY
Essen
Dortmund
Ruhr R.
Düsseldorf
Cologne
Leipzig
Stassfurt
Dresden
Lodz
POLAND
Breslau
Kiev
Dnieper R.
ATLANTIC OCEAN
English Channel
Str. of Dover
Antwerp
Brussels
Lille
Roubaix
BELGIUM
Rouen
Seine R.
Paris
LUXEMBURG
Nancy
Vosges
Frankfort
Rhine
Prague
BOHEMIA
CZECHOSLOVAKIA
Cracow
CARPATHIAN MTS.
Dniester
Danube
Loire R.
Bay of Biscay
FRANCE
Saône R.
Munich
Vienna
Bratislava
Budapest
Odessa
Bordeaux
Bern
Zurich
SWITZERLAND
Brenner Pass
AUSTRIA
HUNGARY
RUMANIA
Lyon
St. Etienne
ALPS
Milan
Bilbao
Oporto
PYRENEES
Douro R.
Ebro R.
PORTUGAL
SPAIN
Madrid
Lisbon
Tagus R.
Grenoble
Rhone
Turin
Po R.
Trieste
Venice
Nice
Marseille
Genoa
ADRIATIC SEA
YUGOSLAVIA
Iron Gates
Belgrade
Ploesti
Bucharest
Constantsa
BLACK SEA
Barcelona
CORSICA (Fr.)
Rome
Tiber R.
ITALY
APENNINES
Sofia
BULGARIA
Istanbul
Bosporus
Ankara
TURKEY
ASIA
Guadalquivir
Seville
Valencia
SARDINIA (It.)
BALEARIC IS. (Sp.)
Naples
Mt. Vesuvius
Tirana
ALBANIA
Strait of Otranto
Bitolj
Salonika
Vardar R.
GREECE
AEGEAN SEA
Dardanelles
Strait of Gibraltar
Tangier (Neutral)
SP. MOROCCO
MEDITERRANEAN SEA
Algiers
Palermo
SICILY
Athens
Casablanca
Tunis
ATLAS MOUNTAINS
MOROCCO (Fr.)
ALGERIA (Fr.)
TUNISIA (Fr.)
MALTA (Br.)
CRETE
AFRICA
Tripoli
LIBYA
60°
50°
40°
30°
20°
10°
0°
70°


ARCTIC OCEAN
70°
ICELAND
Arctic Circle
60°
NORWAY
SWEDEN
FINLAND
60°
ATLANTIC OCEAN
SCOTLAND
NORTH SEA
N. IRELAND
REPUBLIC OF IRELAND (EIRE)
IRELAND
BRITISH ISLES
DENMARK
BALTIC SEA
50°
WALES
ENGLAND
NETHERLANDS
BELGIUM
LUX.
GERMANY
POLAND
RUSSIA
50°
CZECHOSLOVAKIA
FRANCE
SWITZERLAND
AUSTRIA
HUNGARY
RUMANIA
YUGOSLAVIA
ITALY
ADRIATIC SEA
BLACK SEA
40°
PORTUGAL
SPAIN
CORSICA
SARDINIA
BULGARIA
ALBANIA
GREECE
TURKEY
40°
AEGEAN SEA
SICILY
CRETE
MEDITERRANEAN SEA
SP. MOROCCO
MOROCCO
ALGERIA
TUNISIA
AFRICA
LIBYA
30°
10°
20°
WESTERN EUROPE
Miles
0 100 200 30
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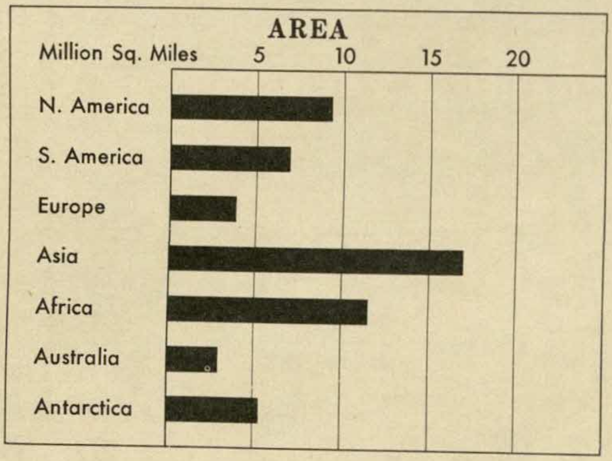
Graphs and Statistics

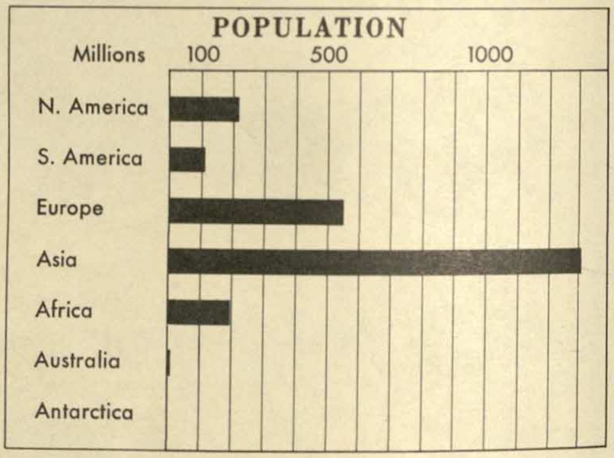
The following information concerns the area and population of various parts of the world. The figures represent the latest available statistics or estimates. In the case of the United States, the information with regard to population is based on the official census of 1950, not on estimates which have been made since then. Until an actual count or new census is made, one cannot be sure how much the population of certain areas or places has changed. The area of inland waters may, or may not, be included in the area of a country.

The material has been gathered from various sources. The facts about the area and population of the United States were supplied by the Bureau of the Census.

CONTINENTS

	AREA IN SQUARE MILES	POPULATION
North America (Including Mexico and Central America)	9,347,471	215,502,623
South America	6,893,735	111,133,000
Europe (Including European Russia)	3,820,208	547,659,000
Asia (Including Asiatic Russia)	17,007,663	1,312,330,000
Africa	11,594,705	197,698,000
Australia	2,974,581	8,186,000
Antarctica	5,379,817	....





NORTH AMERICA

	AREA IN SQ. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
The United States	3,022,387	150,697,361	Washington, D. C	802,178
Alaska	586,400	128,643	Juneau	5,946
Canada	3,845,144	14,009,429	Ottawa	202,045
Costa Rica	19,238	801,000	San José	86,718
Cuba	44,206	5,348,000	Havana	800,000
Dominican Republic	19,332	2,121,000	Ciudad Trujillo	181,583
Greenland	840,154	23,642	Godthaab	1,313
Guatemala	42,042	2,803,000	Guatemala City	293,998
Haiti	10,714	3,112,000	Port-au-Prince	424,168
Honduras	59,165	1,534,000	Tegucigalpa	92,951
Mexico	760,375	25,368,000	Mexico City	2,233,914
Nicaragua	57,143	1,053,000	Managua	107,444
Panama	28,575	801,000	Panama	247,027
Puerto Rico	3,435	2,210,703	San Juan	357,205
Salvador, El	13,176	1,859,000	San Salvador	160,380

SOUTH AMERICA

	AREA IN SQ. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Argentina	1,078,745	17,196,000	Buenos Aires	3,367,729
Bolivia	416,040	3,900,000	La Paz	321,063
Brazil	3,286,170	52,124,000	Rio de Janeiro	2,413,152
British Guiana	89,480	420,000	Georgetown	87,279
Chile	286,396	5,809,000	Santiago	1,673,000
Colombia	439,829	11,260,000	Bogotá	643,187
Ecuador	106,178	3,077,000	Quito	211,566
French Guiana	34,740	26,000	Cayenne	11,704
Paraguay	157,025	1,406,000	Asunción	205,605
Peru	514,059	8,405,000	Lima	835,468
Surinam	55,140	219,000	Paramaribo	83,000
Uruguay	72,172	2,365,000	Montevideo	784,000
Venezuela	352,143	4,924,000	Caracas	487,903

EUROPE

Albania	10,629	1,226,000	Tirana	40,000
Austria	32,388	6,952,744	Vienna	1,760,784
Belgium	11,775	8,678,000	Brussels	965,947
Britain	94,279	50,369,809	London	8,346,137
Bulgaria	42,796	7,300,000	Sofia	434,888
Czechoslovakia	49,330	12,339,674	Prague	922,284
Denmark	16,575	4,281,275	Copenhagen	974,901
Finland	130,160	4,032,538	Helsinki	367,462
France	212,659	42,239,000	Paris	2,725,374
Germany	136,548	68,345,881	Berlin	3,336,475
Greece	51,182	7,603,599	Athens	559,250
Hungary	35,911	9,350,000	Budapest	1,058,288
Ireland, Republic of	26,600	2,958,878	Dublin	521,322
Italy	116,235	47,138,235	Rome	1,695,477
Luxemburg	999	298,578	Luxemburg	61,590
Netherlands	15,764	10,328,343	Amsterdam	803,847
Norway	124,556	3,278,546	Oslo	433,000
Poland	121,131	24,976,926	Warsaw	641,877
Portugal	35,413	8,441,312	Lisbon	783,919
Rumania	91,671	16,169,000	Bucharest	1,041,807
Spain	194,232	27,965,755	Madrid	1,618,435
Sweden	173,394	7,044,039	Stockholm	744,341
Switzerland	15,944	4,714,992	Bern	146,499
Union of Soviet Socialist Republics (In Europe and in Asia)	8,708,070	210,000,000	Moscow	4,137,018
Yugoslavia	99,050	16,250,000	Belgrade	367,816

ASIA

Afghanistan	250,000	12,000,000	Kabul	206,200
Bhutan	18,000	300,000	Punaka	5,000
Burma	261,610	18,674,000	Rangoon	500,800
Ceylon	25,332	8,103,648	Colombo	362,074
China	4,230,389	486,770,000	Nanking	1,020,000
India (Excluding Kashmir)	1,056,556	356,891,624	New Delhi	276,314
Indo-China	286,000	27,580,000	Pnompenh Vientiane Saigon	111,000 10,000 698,000
Indonesia	735,267	76,500,000	Jakarta	2,000,000
Iran	628,000	17,000,000	Teheran	618,976
Iraq	116,600	5,100,000	Baghdad	550,000
Israel	8,048	1,607,000	Jerusalem	137,500
Japan	146,690	83,199,637	Tokyo	5,385,071
Jordan	37,700	1,250,000	Amman	150,000
Korea	85,246	29,500,000	Seoul	1,446,019
Lebanon	3,474	1,257,000	Beirut	274,000
Malaya	50,690	5,337,000	Kuala Lumpur	175,961
Mongolia	580,158	647,500	Ulan Bator	80,000
Nepal	54,000	7,000,000	Katmandu	110,000
Pakistan	364,737	75,842,000	Karachi	1,126,417
Philippines	115,600	20,246,000	Quezon City	108,000
Saudi Arabia	714,500	6,000,000	Riyadh Mecca	60,000 150,000
Singapore	225	1,079,794	Singapore	679,659

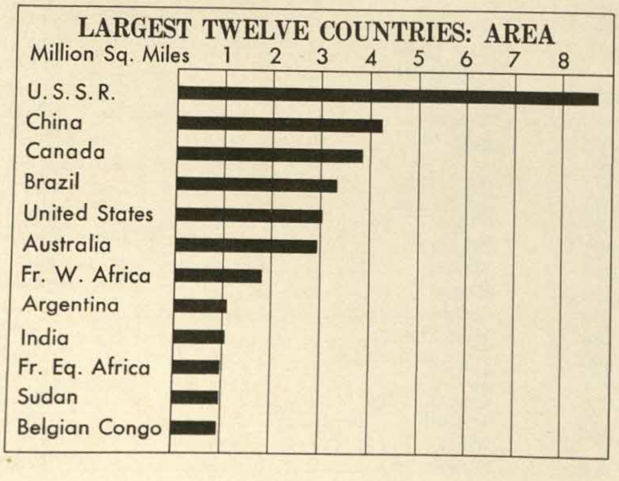
	AREA IN SQ. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Syria	72,560	3,291,000	Damascus	346,000
Thailand	198,272	19,250,000	Bangkok	620,830
Turkey	296,185	20,934,670	Ankara	286,781
Union of Soviet Socialist Republics (In Europe and in Asia)	8,708,070	210,000,000	Moscow	4,137,018
Yemen	75,000	4,500,000	San'a	25,000

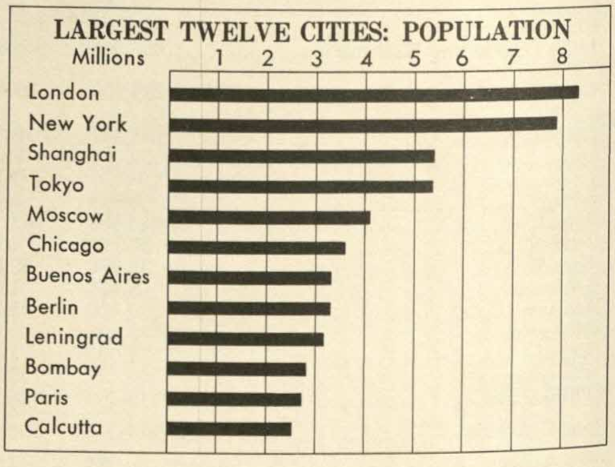
AFRICA

Algeria	851,298	8,876,016	Algiers	315,210
Anglo-Egyptian Sudan	967,500	8,764,000	Khartum	82,700
Angola	481,351	4,111,796	Luanda	158,882
Bechuanaland	275,000	296,883	Mafeking	8,666
Belgian Congo	904,757	11,666,698	Leopoldville	257,275
British Somaliland	68,000	700,000	Berbera	
Cameroons	166,489	3,073,387	Yaoundé	50,000
Egypt	386,198	20,729,000	Cairo	2,090,654
Ethiopia	395,754	16,104,000	Addis Ababa	340,000
French Equatorial Africa	969,112	4,441,203	Brazzaville	83,390
French Somaliland	9,071	55,770	Djibouti	22,000
French West Africa	1,805,210	17,208,000	Dakar	185,000
Gambia	4,074	273,000	Bathurst	14,370
Gold Coast	91,843	4,111,680	Accra	135,926
Italian Somaliland	194,000	1,270,230	Mogadiscio	74,000
Kenya	224,960	5,700,000	Nairobi	118,976
Liberia	43,000	1,648,000	Monrovia	20,000
Libya	679,358	1,124,000	Tripoli	135,858
Madagascar	231,250	4,369,500	Tananarive	174,153
Morocco	153,870	8,410,000	Rabat	161,416
Mozambique	297,731	5,732,767	Lourenço Marques	93,516
Nigeria	372,674	25,000,000	Lagos	230,000
Rhodesia and Nyasaland, Federation of	478,027	6,478,194	Salisbury	119,011
Rio de Oro	73,362	35,000	Villa Cisneros	3,000
Sierra Leone	27,925	2,005,000	Freetown	86,000
South West Africa	317,725	430,354	Windhoek	20,490
Tanganyika	362,688	7,600,000	Dar es Salaam	99,140
Tunisia	48,332	3,500,000	Tunis	364,593
Uganda	93,981	5,187,000	Entebbe	7,932
Union of South Africa	472,550	12,646,375	Cape Town Pretoria	571,638 283,148
Zanzibar	1,020	264,162	Zanzibar	45,275

AUSTRALIA AND NEW ZELAND

Australia	2,974,581	8,186,000	Canberra	15,156
New Zealand	103,723	1,920,000	Wellington	120,072





CITIES WHICH HAVE A POPULATION OF 500,000 OR MORE

United States cities appear in bold type

CITY	POPULATION
Ahmedabad, India	788,333
Alexandria, Egypt	925,081
Amsterdam, Netherlands	803,847
Antwerp, Belgium	794,280
Athens, Greece	559,250
Baghdad, Iraq	550,000
Baku, U.S.S.R.	809,347
Baltimore, Md.	**949,708**
Bangalore, India	778,977
Bangkok, Thailand	620,830
Barcelona, Spain	1,280,179
Berlin, Germany	3,336,475
Birmingham, England	1,112,340
Bogotá, Colombia	643,187
Bombay, India	2,839,270
Boston, Mass.	**801,444**
Brussels, Belgium	965,947
Bucharest, Rumania	1,041,807
Budapest, Hungary	1,058,288
Buenos Aires, Argentina	3,367,729
Buffalo, N.Y.	**580,132**
Cairo, Egypt	2,090,654
Calcutta, India	2,548,677
Canton, China	1,495,694
Cape Town, Union, S. Africa	571,638
Casablanca, Morocco	551,322
Changchun, China	544,202
Chengtu, China	749,770
Chicago, Ill.	**3,620,962**
Chungking, China	1,038,683
Cincinnati, Ohio	**503,998**
Cleveland, Ohio	**914,808**
Cologne, Germany	594,941
Copenhagen, Denmark	974,901
Dairen, China	1,054,465
Delhi, India	914,790
Detroit, Mich.	**1,849,568**
Dnepropetrovsk, U.S.S.R.	500,662
Dortmund, Germany	507,349
Dublin, Ireland	521,322
Düsseldorf, Germany	500,516
Essen, Germany	605,411
Frankfurt am Main, Germany	532,037
Genoa, Italy	683,023
Glasgow, Scotland	1,089,555
Gorki, U.S.S.R.	644,116
Havana, Cuba	800,000
Hamburg, Germany	1,605,606
Hankow, China	1,008,205
Harbin, China	661,984
Houston, Texas	**596,163**
Hyderabad, India	1,085,722
Istanbul, Turkey	1,000,022
Jakarta, Indonesia	2,000,000
Johannesburg, Union, S. Africa	630,297
Kanpur, India	705,383
Karachi, Pakistan	1,126,417
Kharkov, U.S.S.R.	833,432
Kiev, U.S.S.R	846,293
Kobe, Japan	765,435
Kowloon, Hong Kong	547,200
Kyoto, Japan	1,101,854
Lahore, Pakistan	849,333
Leeds, England	504,954
Leipzig, Germany	607,655
Leningrad, U.S.S.R.	3,191,304
Lima, Peru	835,468
Lisbon, Portugal	783,919
Liverpool, England	789,532
Lodz, Poland	622,495
London, England	8,346,137
Los Angeles, Calif.	**1,970,358**
Madras, India	1,416,056
Madrid, Spain	1,618,435
Manchester, England	703,175
Manila, Republic of the Philippines	1,300,000
Marseille, France	636,264
Melbourne, Australia	1,226,409
Mexico City, Mexico	2,233,914
Milan, Italy	1,272,934
Milwaukee, Wis.	**637,392**
Minneapolis, Minn.	**521,718**
Montevideo, Uruguay	784,000
Montreal, Canada	1,021,520
Moscow, U.S.S.R.	4,137,018
Mukden, China	1,551,317
Munich, Germany	831,937
Nagoya, Japan	1,030,635
Nanking, China	1,020,000
Naples, Italy	1,027,800
New Orleans, La.	**570,445**
New York, N.Y.	**7,891,957**
Odessa, U.S.S.R.	604,223
Osaka, Japan	1,956,136
Palermo, Italy	501,005
Paris, France	2,725,374
Peiping, China	1,940,290
Philadelphia, Pa.	**2,071,605**
Pittsburgh, Pa.	**676,806**
Prague, Czechoslovakia	922,284
Rangoon, Burma	500,800
Recife, Brazil	534,468
Rio de Janeiro, Brazil	2,413,152
Rome, Italy	1,695,477
Rosario, Argentina	761,300
Rostov, U.S.S.R.	510,253
Rotterdam, Netherlands	646,248
Saigon, Indo-China	698,000
St. Louis, Mo.	**856,796**
San Francisco, Calif.	**775,357**
Santiago, Chile	1,673,000
Saõ Paulo, Brazil	2,227,512
Seoul, Korea	1,446,019
Shanghai, China	5,406,644
Sheffield, England	512,834
Sian, China	559,127
Singapore, Singapore	679,659
Stockholm, Sweden	744,341
Sydney, Australia	1,484,004
Taipeh, Formosa	503,086
Tashkent, U.S.S.R.	585,005
Tiflis, U.S.S.R.	519,175
Teheran, Iran	618,976
The Hague, Netherlands	591,765
Tientsin, China	1,785,813
Tokyo, Japan	5,385,071
Toronto, Canada	675,754
Tsinan, China	642,275
Tsingtao, China	884,368
Turin, Italy	720,032
Valencia, Spain	509,075
Victoria, Hong Kong	766,800
Vienna, Austria	1,760,784
Warsaw, Poland	641,877
Washington, D.C.	**802,178**
Yokohama, Japan	951,189

THE UNITED STATES

	AREA IN SQ. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
THE UNITED STATES	3,022,387	150,697,361	Washington, D. C	802,178
Alabama	51,609	3,061,743	Montgomery	106,525
Arizona	113,909	749,587	Phoenix	106,818
Arkansas	53,103	1,909,511	Little Rock	102,213
California	158,693	10,586,223	Sacramento	137,572
Colorado	104,247	1,325,089	Denver	415,786
Connecticut	5,009	2,007,280	Hartford	177,397
Delaware	2,057	318,085	Dover	6,223
Florida	58,560	2,771,305	Tallahassee	27,237
Georgia	58,876	3,444,578	Atlanta	331,314
Idaho	83,557	588,637	Boise	34,393
Illinois	56,400	8,712,176	Springfield	81,628
Indiana	36,291	3,934,224	Indianapolis	427,173
Iowa	56,280	2,621,073	Des Moines	177,965
Kansas	82,276	1,905,299	Topeka	78,791
Kentucky	40,395	2,944,806	Frankfort	11,916
Louisiana	48,522	2,683,516	Baton Rouge	125,629
Maine	33,215	913,774	Augusta	20,913
Maryland	10,577	2,343,001	Annapolis	10,047
Massachusetts	8,257	4,690,514	Boston	801,444
Michigan	58,216	6,371,766	Lansing	92,129
Minnesota	84,068	2,982,483	St. Paul	311,349
Mississippi	47,716	2,178,914	Jackson	98,271
Missouri	69,674	3,954,653	Jefferson City	25,099
Montana	147,138	591,024	Helena	17,581
Nebraska	77,237	1,325,510	Lincoln	98,884
Nevada	110,540	160,083	Carson City	3,082
New Hampshire	9,304	533,242	Concord	27,988
New Jersey	7,836	4,835,329	Trenton	128,009
New Mexico	121,666	681,187	Santa Fe	27,998
New York	49,576	14,830,192	Albany	134,995
North Carolina	52,712	4,061,929	Raleigh	65,679
North Dakota	70,665	619,636	Bismarck	18,640
Ohio	41,222	7,946,627	Columbus	375,901
Oklahoma	69,919	2,233,351	Oklahoma City	243,504
Oregon	96,981	1,521,341	Salem	43,140
Pennsylvania	45,333	10,498,012	Harrisburg	89,544
Rhode Island	1,214	791,896	Providence	248,674
South Carolina	31,055	2,117,027	Columbia	86,914
South Dakota	77,047	652,740	Pierre	5,715
Tennessee	42,246	3,291,718	Nashville	174,307
Texas	267,339	7,711,194	Austin	132,459
Utah	84,916	688,862	Salt Lake City	182,121
Vermont	9,609	377,747	Montpelier	8,599
Virginia	40,815	3,318,680	Richmond	230,310
Washington	68,192	2,378,963	Olympia	15,819
West Virginia	24,181	2,005,552	Charleston	73,501
Wisconsin	56,154	3,434,575	Madison	96,056
Wyoming	97,914	290,529	Cheyenne	31,935
District of Columbia	69	802,178	Washington	802,178

LANDS BEYOND THE STATES

	AREA IN SQ. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Alaska Territory	586,400	128,643	Juneau	5,946
Guam	206	59,498	Agaña	1,330
Hawaii Territory	6,423	499,794	Honolulu	248,034
Panama Canal Zone	553	52,822		
Puerto Rico	3,435	2,210,703	San Juan	357,205
Virgin Islands	133	26,665	Charlotte Amalie	11,463

INDEX

KEY TO PRONUNCIATION

The letters in the lists below are marked to show their sounds. These marks will help you to pronounce correctly the words in this Index.

ā as āble
ă as in ădd
â as in câre
ä as in ärm
ȧ as in ȧsk
ȧ̆ as in vȧ̆cation
ȧ as in sof*ȧ*
ă as in gi*ă*nt
ē as in ēve

ĕ as in ĕnd
ẽ as in makẽr
ė as in ėvent
ē̦ as in hē̦re
ĕ as in nick*ĕ*l
ī as in īce
ĭ as in ĭll
ĭ as in an*ĭ*mal
ō as in ōld

ŏ as in ŏdd
ô as in ôr
ö as in öbey
ŏ̇ as in sŏ̇ft
ŏ as in c*ŏ*nnect
o͞o as in fo͞od
o͝o as in fo͝ot
oi as in oil
ou as in out

ū as in cūbe
ŭ as in ŭp
û as in bûrn
ů as in ůnite
ü as in menü
ŭ as in circ*ŭ*s
ch as in chair
g as in go

ᴋ as ch in the German word ich
ɴ as in the French word boɴ
th̶ as in th̶en
th as in thin
tû as in natûre
y as in yonder
zh as the z in azure

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